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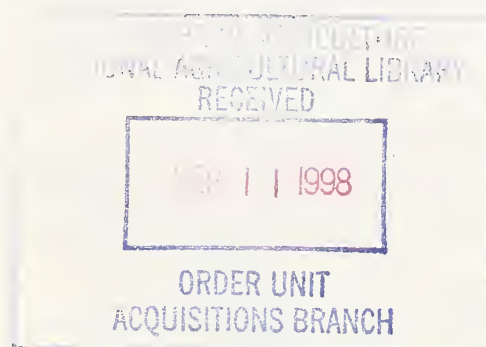


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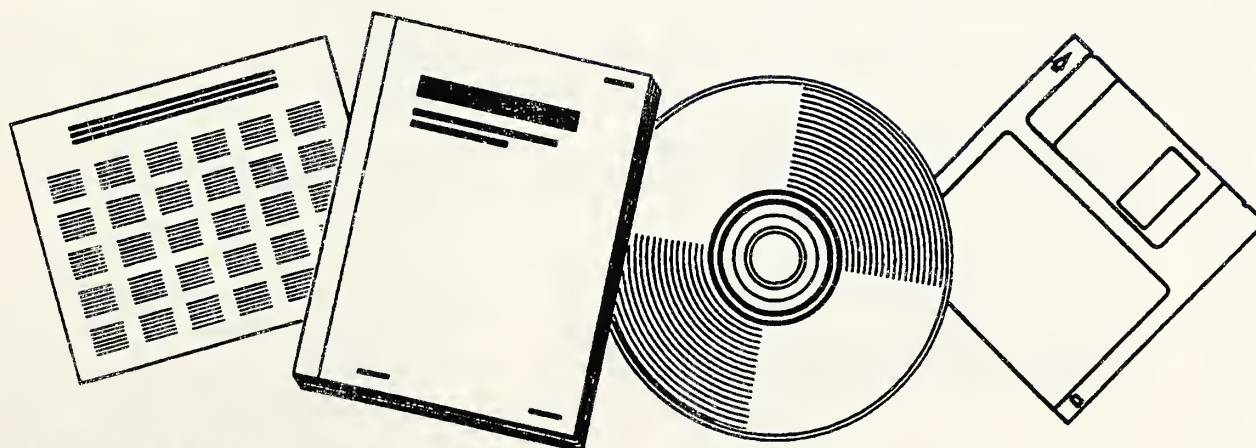
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SWCA, INC.
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POTHUNTING IN CENTRAL ARIZONA:

THE PERRY MESA ARCHEOLOGICAL SITE VANDALISM STUDY

Prepared by

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**Cultural Resources Management
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**USDA Forest Service
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USDI Bureau of Land Management, Arizona

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provided him with a different and valuable perspective on the mesa. We would like to thank Ken Kvamme for sharing with us unpublished information on his (and others') study of pot hunting in southeastern Utah. Tom McGarvin, Arizona Geological Survey, provided valuable assistance in researching the history of mining on Perry Mesa. Jim Tress, our colleague at SWCA, participated in useful discussions on the environment of Perry Mesa and of vandalized sites. Many of the photographs in Appendix D are included courtesy of either the Museum of Northern Arizona or Peter Pilles. Charles Sternberg drafted Figure 1 and all of the site maps included in the report; these drawings exhibit his trademark clarity and attention to detail. Faryl Parsons, also of SWCA, made production of this report possible. Finally, we would like to thank the anonymous subjects who were interviewed for the Oral History component of the study.

FOREWORD

In May of 1988, the Southwestern Region of the Forest Service and Rocky Mountain Forest and Range Experiment Station co-sponsored a symposium at the Grand Canyon. The purpose was to identify and prioritize research needs relative to cultural resources management in the Southwest. Over 50 representatives of Federal and State agencies, universities, Native American tribes, museums, and consulting firms participated in the symposium. The development of effective strategies of site protection and stabilization was identified by the group as the most urgent of a large number of important research topics. The feeling of the symposium participants was that most other research was contingent upon our basic ability to protect the resource.

The following year, in an effort to move forward in gathering and assessing information in support of this research topic, the Region decided to fund a pilot study on pothunting in the Southwest. Perry Mesa offered an

excellent place to begin, both in terms of the significance of its archeological resources and in terms of its tragic history of looting. Perry Mesa also offered the opportunity to cooperate with the Bureau of Land Management in funding and conducting the study, a partnership that has worked extremely well in the past.

The Grand Canyon symposium eventually resulted in the creation of the first Cultural Resources Research Work Unit in the Forest Service. The Work Unit will be based in Albuquerque and should become operational in FY 1993. The Perry Mesa study will provide an important body of information for the Work Unit. It also represents the kind of study that has relevance for on-the-ground cultural resources specialists and land managers because it addresses basic management concerns. Finally, this study represents the kind of cooperative effort that can serve as an excellent model for designing and carrying out future research initiatives.

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CHAPTER 1

INTRODUCTION

In January 1989, Tonto National Forest, in cooperation with the Arizona State Office of the Bureau of Land Management and the Arizona State Land Department, initiated a research program to study archeological site vandalism on Perry Mesa in central Arizona. At the time, each of these agencies administered a portion of Perry Mesa. Five topics were to be addressed by the Perry Mesa Archeological Site Vandalism Study (Tonto National Forest 1989). The topics are rephrased here as research questions:

1. What is the current status of site condition and pot hunting activity in the Perry Mesa locality?
2. What is the history of archeological site vandalism in the study area?
3. What patterns may be perceived in the spatial and temporal distribution of morphological site types within the study area, and how do these patterns relate to site vandalism?
4. What makes some sites more vulnerable to vandalism than others?
5. What can be said about past protective measures for archeological sites within the study area; what kind of future monitoring plan could be implemented to ensure protection of these nonrenewable cultural resources?

The research program was to address these questions through a combination of oral history and archeological fieldwork.

SWCA, Inc. Environmental Consultants proposed to answer these questions through a five-part research program. (1) Library and archival research would be conducted on the existing literature relating to vandalism, on previous archeological studies on Perry Mesa, on inventoried sites in the study area, and on measures that had been taken on Perry Mesa and elsewhere to protect archeological sites. A primary goal of the archival research would be to locate photographs of sites on Perry Mesa that would be suitable for a diachronic study of site condition using the technique of "repeat photography." (2) An intensive study of a sample of inventoried sites on the mesa would be undertaken. The sample was stratified by site type. Sites were to be mapped and photographed, detailed observations on site condition were to be made, and a sample of surface artifacts was to be "field analyzed." (3) An oral history study would be conducted that would include interviews with a variety of individuals familiar with Perry Mesa, including archeologists, land managers from Federal and state agencies, local ranchers, avocational archeologists, and, if possible, pothunters. (4) Data collected in the field would be analyzed for significant relationships among variables relating to vandalism. Geographic Information Sys-

tems (GIS) techniques would be used for spatial analysis of sites and variables. (5) Steps that were taken in the past or that might be taken in the future to protect archeological sites on Perry Mesa would be evaluated.

In April 1990 Tonto National Forest awarded a contract to SWCA to implement this research program. The contract was a joint procurement of the USDA Forest Service and the Bureau of Land Management. SWCA submitted a Final Research Design for the study to Tonto National Forest in May 1990 (Ahlstrom et al. 1990). Research for the oral history phase of the project was conducted by Robert C. Euler between June and September 1990. Archeological fieldwork was completed between 29 May and 4 July 1990, mostly by a crew of four. Richard Ahlstrom served as field supervisor and Greg Seymour, Mark Slaughter, Mark Sullivan and Ken Boden served as crew members. The crew stayed in a motel in Cordes Junction, approximately 16 km (10 miles) and 45 minutes to an hour from the nearest portion of the project area. To avoid the commute from Cordes Junction to Perry Mesa -- which stretched to two hours and more for much of the project area -- the crew spent eight nights camped on the mesa. The field session was uneventful, with the unfortunate exception of a broken leg suffered by one crew member.

A Draft Report on the project was submitted to Tonto National Forest in December 1990 and a Final Report in June 1991. The latter document has been revised slightly to produce this report.

The Perry Mesa Site Vandalism Study can be placed in the broader context of Conservation Archeology. In his 1974 article, "A Conservation Model for American Archaeology," William D. Lipe argued for greater participation of the archeological community in efforts to preserve the archeological resource base for generations to come. Lipe's discussion suggests two primary reasons to protect archeological resources. The first is to provide for the continuing intellectual health of anthropological archeology, by guaranteeing that archeologists of the future will have the opportunity to conduct meaningful field research. The realization of a threat to the archeological resource is not new (for example, Downum 1988:197-198). The second reason to protect archeological resources is so they can continue to provide social benefits like those identified by Clark (1957) and Lipe (1974). These benefits range from the mundane -- such as increasing local tourism -- to the sublime -- for example, fostering the appreciation of a common world heritage based on prehistory.

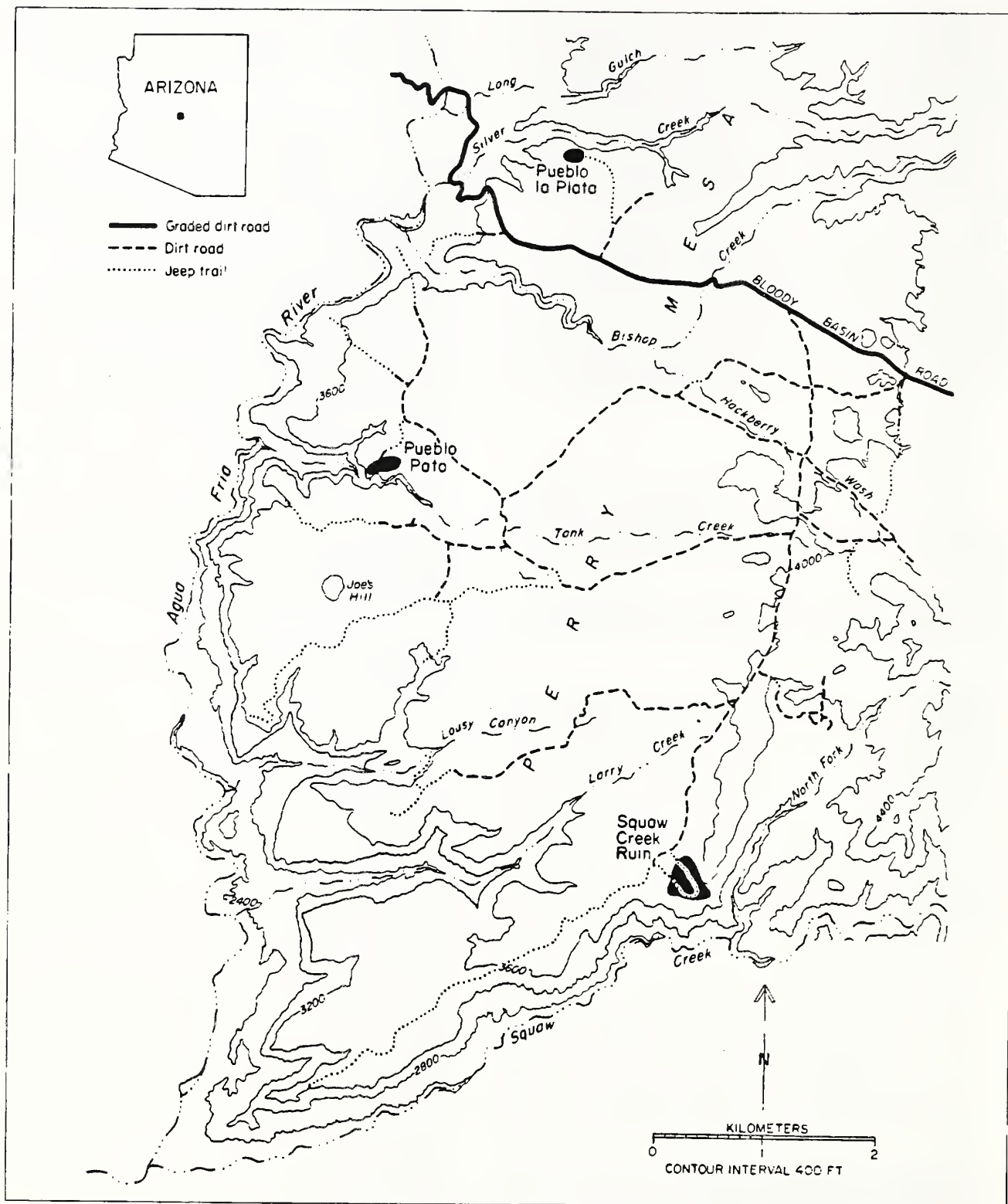


Figure 1. Topographic map of Perry Mesa showing several large ruins.

Both of these reasons for protecting archeological resources are germane to the Perry Mesa locality. The numerous sites on the mesa provide a wealth of opportunities to conduct important and innovative archeological research; similarly, the richness of the local archeology makes Perry Mesa an ideal setting in which to interpret one chapter of Arizona's prehistory for an interested public. Unfortunately, both the research and the interpretive potential of Perry Mesa's archeological resources have been and are being compromised by the extensive, intensive, and illegal looting of sites on the mesa. A primary purpose of the Perry Mesa Site Vandalism Study is to understand this activity, both its causes and its consequences, in the hope that the knowledge gained will make us better able to protect these archeological resources in the future.

ENVIRONMENT OF PERRY MESA

Perry Mesa is located in Yavapai County, central Arizona, in the mountainous transition zone that lies between the Colorado Plateau to the north and the basin-and-range region to the south. The mesa forms a small plateau bordered by deep canyons on the west and south and by broken, hilly country on the north and east (Figure 1). It measures about 10 miles (16 km) north-south by 7 miles (11 km) east-west. The Agua Fria River runs through the canyon to the west of the mesa and Squaw Creek, a tributary of the Agua Fria, runs through the canyon to the south. Black Mesa is located to the west of Perry Mesa, across the canyon of the Agua Fria. The surface of Perry Mesa consists of Tertiary basalt lava flows, which are underlain by Precambrian rock. Joe's Hill (Figure 1) is apparently a shield volcano that was the source of the lava (Wood 1985:1). The mesa is characterized by gentle slopes, low hills and ridges, shallow drainages, and several major, east-west trending canyons. Elevations on the mesa vary from around 3200 to 4100 feet (975 to 1250 m) above sea level. Map data indicate that the mesa has "nearly level to gently sloping, moderately deep and deep, cobbly clay soils" (Soil Conservation Service 1972:5).

Vegetation is predominantly semidesert grassland (Brown and Lowe 1980; Brown 1982). Acacia and mesquite grow in some areas, particularly on ridges and hills and along washes, and juniper woodland occurs where the east side of the mesa merges with the adjacent hills. Riparian plant associations characterize the deeper, downstream portions of the east-west canyons. This vegetation profile probably differs to some extent from that of the prehistoric period:

[Perry Mesa is] covered with a disturbed mixed

shrub-grass disclimax association consisting predominantly of invasive species: mesquite, catclaw acacia, mimosa, yucca, prickly pear, cholla, snakeweed, globemallow, and thistle. There is little doubt that a more uniform grassland covered the area within recent times (perhaps as late as the 1880s). Junipers are invading the region judging from the young age of most individuals encountered [Gumerman et al. 1975:3-51].

Today, the most practical route of vehicular access to Perry Mesa is from Interstate Highway 10 to Bloody Basin Road. This road, which is graded dirt, climbs onto Perry Mesa about 8 miles (13 km) from the interstate. The road crosses the north end of Perry Mesa, intersecting a network of lesser dirt roads that lead to all parts of the mesa. The mesa can also be approached on Bloody Basin Road from the east, though only after a journey of many miles on dirt roads. As for foot traffic, access is easy from the hilly country to the north, somewhat difficult from the hills to the east, and difficult to arduous from the canyons to the west and south.

As of the beginning of the Perry Mesa Site Vandalism Study, the mesa was divided among three state and Federal agencies -- in order of acreage, the Arizona State Land Department, Tonto National Forest, and the Bureau of Land Management. In the interim, the State Land Department has completed a program to exchange its holdings on Perry Mesa with the Bureau of Land Management for land located elsewhere.

THE ARCHEOLOGY AND PREHISTORY OF PERRY MESA

Previous Archeological Research

Four studies are responsible for the majority of archeological research -- including site recording -- that has been conducted on Perry Mesa. As discussed in Appendix C, the institutional and locational context of these studies explains why sites on Perry Mesa possess several different kinds of site numbers. Many sites possess more than one of these different numbers. Because the archeological surveys done on Perry Mesa have not been fully reported, site records (forms and cards) provide most or all of the information available on most sites.

1. In the late 1960s, Peter J. Pilles recorded about 20 sites at the eastern edge of Perry Mesa, both on the mesa proper and in the hilly country that flanks the mesa on that side (the Brooklyn Mine area). Several of the sites had been recorded in 1955 by the spring archeology seminar, Department of An-

thropology, University of Arizona. A report on Pilles's survey has not appeared, although a paper describing one of the recorded sites does exist (Pilles and Miller 1967). In addition, Pilles and Kalich (1967) excavated a rock-shelter site in this area.

2. From 1970 to about 1974, the Museum of Northern Arizona's Navajo Project conducted survey and excavation along a powerline right-of-way that runs north-south across the western edge of Perry Mesa (referred to in this report as the "APS Right-of-Way" and the "APS Powerlines"). This project, reported by Fiero et al. (1980), recorded 37 sites; nine of these were excavated.

3. Between 1973 and 1975, the Central Arizona Ecotone Project (CAEP) surveyed several blocks, transects, and irregular areas (defined with relation to canyon systems) on Perry Mesa. The work, which was sponsored initially by Prescott College and later by Southern Illinois University, resulted in the recording of approximately 109 sites on the western side of Perry Mesa (Tonto National Forest Site Files). Some of the sites lie on slopes, knolls, and drainage bottoms below the mesa's rim, that is, outside the area of the Perry Mesa Site Vandalism Study. Minor excavations were conducted at three of the Perry Mesa sites (Gumerman et al. 1976)

The CAEP worked in three environments, called the basin-and-range complex, the transition zone, and the mesa-canyon complex; the last of these corresponds to Perry Mesa. CAEP publications dealing with Perry Mesa include a preliminary report on survey and excavation (Gumerman et al. 1976), a report on work conducted in the transition zone (Spoerl and Gumerman 1984), a report on the use of remote sensing by the CAEP (Gumerman et al. 1976), and a paper on the relation of fourteenth and fifteenth century settlement on Perry Mesa to the "Salado phenomenon" (Gumerman and Weed 1976). Unfortunately, a final report on the Perry Mesa portion of the CAEP has not appeared.

4. In 1974 and 1975, the Museum of Northern Arizona conducted archeological survey on Perry Mesa in connection with its EBASCO Project (Fish et al. 1975). The purpose of this project was to evaluate alternative corridors for a powerline that was to cross the Perry Mesa region from north to south. Sample surveys were conducted in order to test a predictive model of site density and archeological sensitivity. Two of the alternative routes ran across the west side of Perry Mesa, and 33 sites were recorded in this area. In addition, portions of

Black Mesa across the canyon of the Agua Fria from Perry Mesa were surveyed, resulting in the recording of a number of sites.

Thanks primarily to these four projects, approximately 200 sites have been recorded on Perry Mesa (Tonto National Forest 1989: Attachment J.3). Together, the projects have produced a fairly intensive survey of an irregular area on the west side of Perry Mesa, extending one to two and one-half kilometers east and southeast from the APS Powerlines (south of Bishop Canyon only). Unfortunately, most of the rest of Perry Mesa has been surveyed unintensively, or not at all.

Prehistory and History of Perry Mesa

The time before Anglo settlement on Perry Mesa can be divided into three periods, the second of which accounts for the bulk of archeological evidence from the mesa. A fourth period applies to historic use of Perry Mesa.

Period 1: Archaic to Preclassic

Period 1 includes the prehistoric occupation of Perry Mesa up to around A.D. 1150. Fish et al. (1975:31-34) report one possible Archaic site and two Hohokam sites of the late Colonial or early Sedentary periods on Perry Mesa. Tonto National Forest (1989: Attachment J.3) lists three sites on Perry Mesa that apparently date to the Preclassic period, that is, to before A.D. 1150; at least one of these appears in Fish et al.'s count.

Fish et al. (1975) refer to an abundance of Archaic points in private collections from sites in the Prescott area, some 20 to 30 miles (30 to 50 km) northwest of Perry Mesa; similarly, Formby (1986) illustrates numerous Archaic points from Chino Valley, a few tens of kilometers north of Prescott. Sufficient survey has been done on Perry Mesa to suggest that comparable evidence of activity during the Archaic is unlikely to be found in this area. The one possible Archaic site on Perry Mesa mentioned by Fish et al. (1975:31) "has several basin-shaped bedrock metates, one-hand manos, no sherds and an abundance of lithic artifacts"; the identity (i.e., number) of this site is unclear.

Fish et al. (1975:33-34) describe two Hohokam sites: a sherd-and-lithic scatter and NA 13304, a quarter-mile-long site with Wingfield Plain pottery, ground-stone tools, pieces of shell artifacts, and at least one stone alignment that may be part of a structure; pit houses may also be present (Fish et al. 1975:33; Appendix C). A third site, NA 13316, also has Wingfield Plain (along with other plainware), in addition to black-on-white pottery, ground- and flaked-stone tools, and

several stone alignments and structures (Appendix C); further work is needed to determine if this is another Hohokam site.

Survey data suggest that, though present, Hohokam sites are not abundant on Perry Mesa. According to Fish et al. (1975:34), the presence of Hohokam sites on Perry Mesa "indicates another pattern of Hohokam subsistence that has not yet been investigated, dry farming and gathering activities in a high grassland setting." Evidence relating to this special adaptation may in fact be available -- from the Henderson Site, located near Dewey, some 30 miles (20 km) northwest of Perry Mesa (Weed and Ward 1970).

Period 2: The Perry Mesa Tradition.

Most of the archeological sites on Perry Mesa can be assigned to what Fish et al. (1975) define as the "Perry

Mesa Tradition." They place the tradition's beginning date in the late 1200s or early 1300s, and they state that its end date is unknown (Fish et al. 1975:28). A beginning date between A.D. 1150 and 1300 and an end date of A.D. 1400 have also been suggested (Tonto National Forest 1989: Attachment J.3)

Fish et al. (1975:28) identify a number of characteristics of the Perry Mesa Tradition (see also Fish et al. 1975:34-45; Fiero et al. 1980; Jacka 1980; Wood 1985; Macnider and Effland 1989:813-185). These characteristics include (1) masonry pueblo towns and (2) sometimes clustering and often pairing of pueblos. Figure 2 shows the layout of Pueblo Pato, which includes a cluster of room blocks. Pueblo Pato is typical of sites with more than one room block, in that there appear to be no features linking the structures or otherwise defining the space between them. Although the room blocks are in this sense "discrete," there are

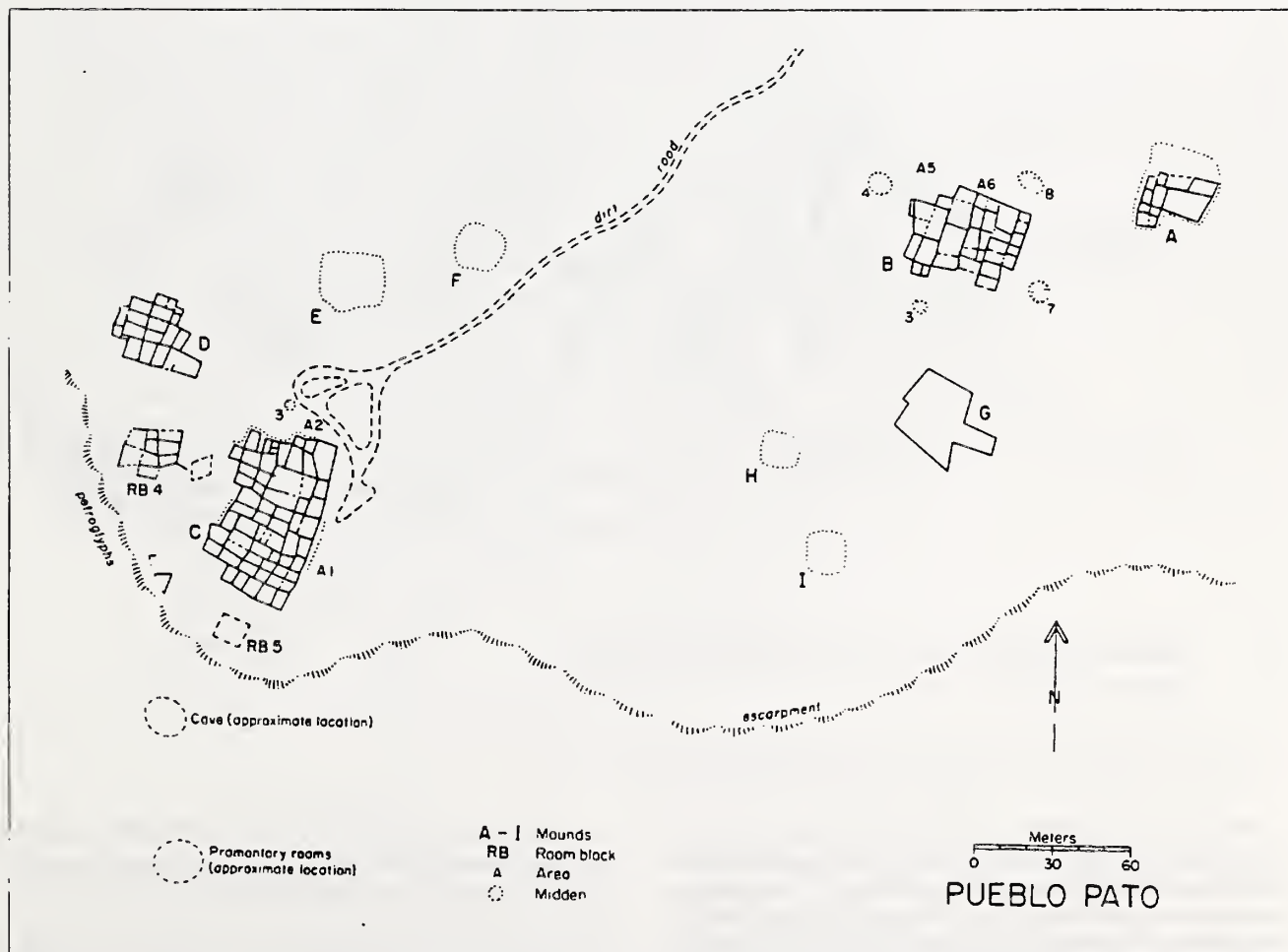


Figure 2. Map of Pueblo Pato.

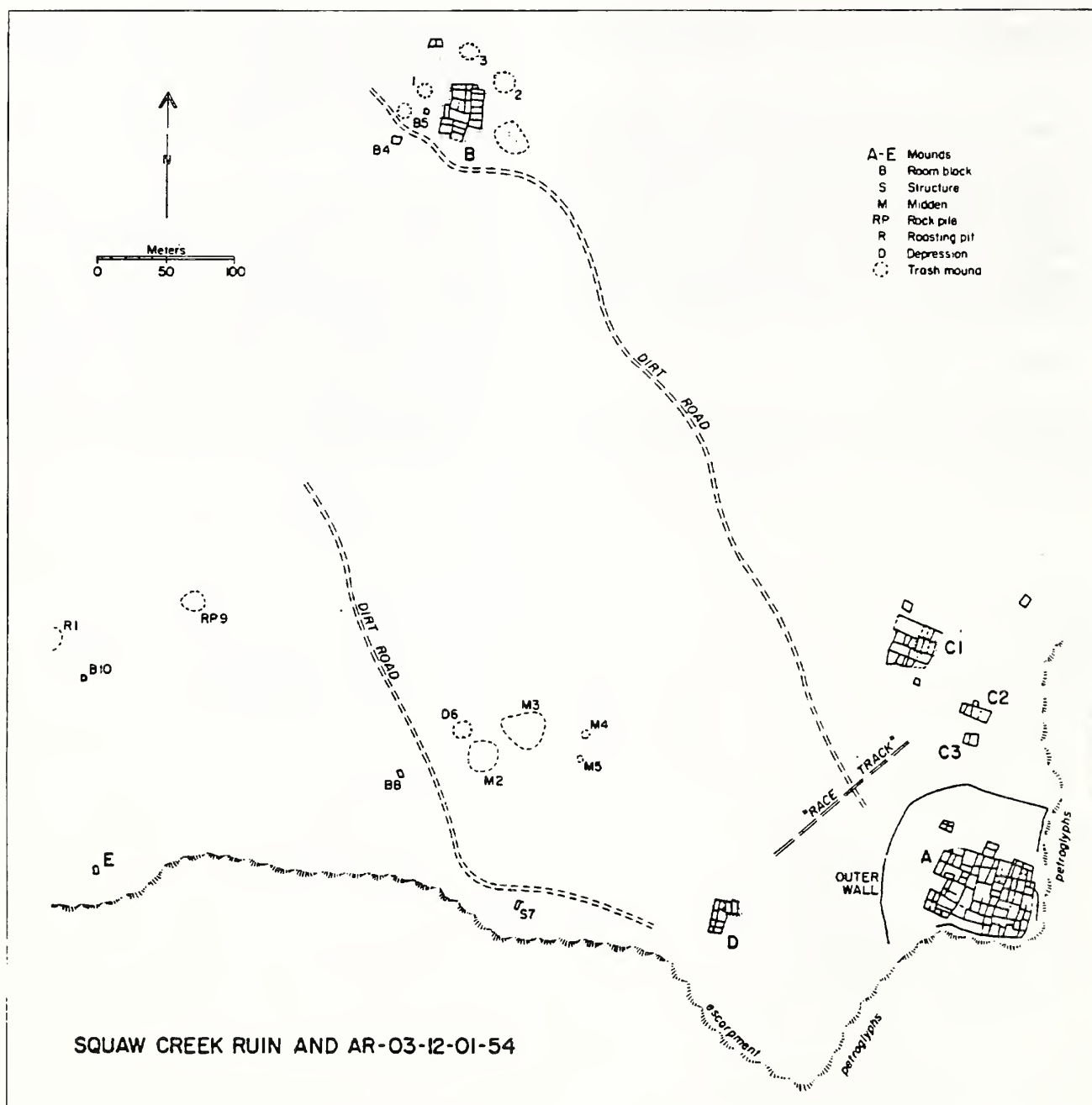


Figure 3. Map of Squaw Creek Ruin and Site AR-03-12-01-54.

at least two situations in which the space around a room block is segmented. The common case involves trash mounds, or middens, which are scattered at intervals around some room blocks (Figure 2:Mound B; Figure 3:Mound B). These middens, which consist of dark earth, are up to a half meter in height and 15 meters across. The second situation in which the

space around a room block is segmented occurs at Squaw Creek Ruin. Mound A at this site is separated from the rest of the mesa by an outer wall (Figure 3).

The room blocks at sites on Perry Mesa consist of more or less rectangular masses of contiguous rooms (Figure 4). Some of the larger mounds are 2 to 3

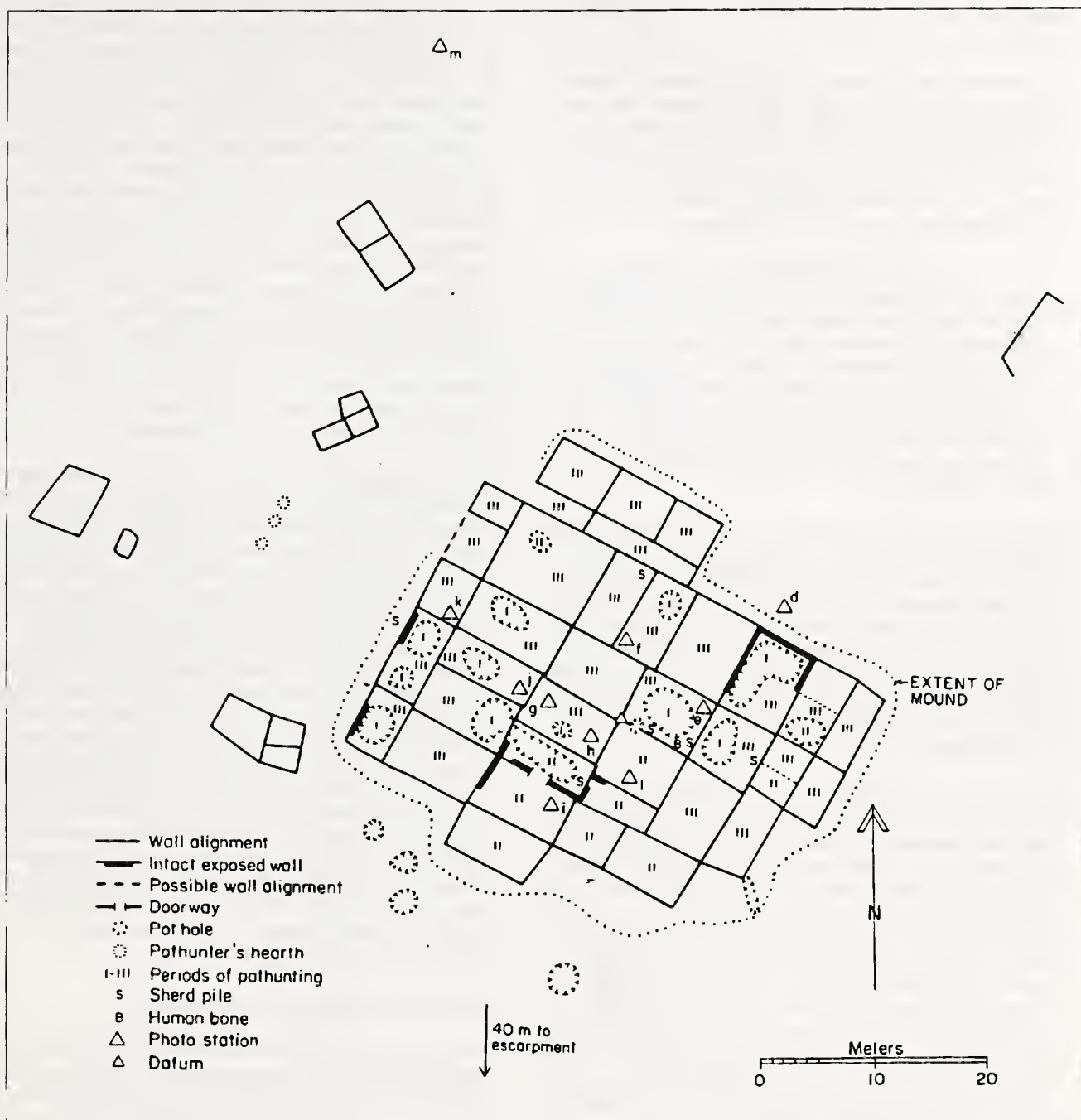


Figure 4. Site map of ARIZ N:16:80(PC).

meters in height and incorporate 100 and more ground-floor rooms. Digging by pothunters has revealed that the rooms are often joined by doorways; on the other hand, there appear to be few doors in the outer walls of the room blocks. Contemporaneous pueblos in the Verde Valley, located 20 to 30 miles to the north, often

have especially large rooms that have been interpreted as "community structures" (Fish and Fish 1977:16). Whether similar chambers occur on Perry Mesa is unknown: although large "rooms" can be identified on some of our maps of Perry Mesa sites, these are probably a function of the destruction of the

upper portions of walls by pothunters (see also Wood 1985:3).

(3) Another characteristic of the Perry Mesa Tradition is the presence of "complex and extensive water and soil control devices in agricultural fields" (Fish et al. 1975:28; see also Fish et al. 1975:37-39; Gumerman et al. 1975:Table 3-VI). A small-scale palynological study of one of these agricultural sites was able to differentiate two kinds of pollen spectra.

One resembles the spectrum of the modern surface. It is reasonable to guess that samples yielding this pattern were taken from sediments post-dating prehistoric use. The other group of pollen spectra resemble one another, but not the modern surface. The samples which produced these were more successful efforts to locate the surface associated with prehistoric cultivation, as two of these samples contain pollen of corn, *Zea* [Fish 1980:265].

These agricultural sites are just one line of evidence relating to subsistence. A relevant characteristic of the Perry Mesa Tradition not considered by Fish et al. is (4) the presence of rock-ringed roasting pits (Figure 5; Fiero et al. 1980:Figure 55). These processing features may be associated with the exploitation of agave, as well as other food resources. The middens associated with some of the larger room blocks, mentioned above, may reflect similar processing activities -- minus the rock rings

Fish et al. (1975:28) identify additional characteristics of the Perry Mesa Tradition that can be considered together, because they bear directly on the activities of pothunters: (5) extended inhumation burial, (6) a redware/brownware ceramic complex, (7) absence of indigenous decorated ceramics, (8) the presence of the three-quarter grooved axe, (9) the mescal knife or hoe as a common artifact type and (10) use of the *comal*, "a flat slab of stone or clay that was used in the cooking of tortillas" (Fish et al. 1975:28). Fish et al. do not mention (11) the presence of decorated pottery obtained through trade, including Hopi Yellow Ware, Salado Polychrome, White Mountain Redware, and black-on-white pottery. Vandals have been digging in the sites on Perry Mesa for at least the last four decades in order to obtain these artifacts, particularly whole pots. A focus of their activity has been the discovery of burials, which are typically accompanied by these objects.

Three additional characteristics of the Perry Mesa Tradition are not included in Fish et al.'s list. (12) Numerous small sites, with fewer than 10 rooms, are

scattered about Perry Mesa (Figures 5 through 7). Fiero et al. (1980:119-120) discuss functional criteria for distinguishing two kinds of these sites on Perry Mesa: field houses -- small sites where a limited range of agricultural and gathering activities were performed, perhaps seasonally -- and outliers -- with evidence for a wider range of activities and more permanent use. This distinction is based on the abundance of artifacts, the diversity of artifact classes, the diversity of ceramic functional categories (Braun 1980), the presence or absence of burials, and so forth. (13) Also present at some of the larger sites are long, linear features known informally as "racetracks" (Wood 1985:4). These features, which can be distinguished both on aerial photographs and on the ground, are approximately 5 m across and 100 to 200 m in length (Figure 3). (14) Finally, some sites have walls that may have been defensive features, and at least one site (NA 13,350) is best described as a "fort" (Appendix C).

This listing of characteristics provides one perspective on the Perry Mesa Tradition. Equally important is the realization that these traits are present in a population of sites. As noted, approximately 200 sites have been recorded on the mesa, and most of these relate to the Perry Mesa Tradition. Several dozen sites include more than 20 ground-floor rooms, and perhaps a half dozen sites or site complexes include more than 100 ground-floor rooms. These communities are spaced at intervals around the margin of Perry Mesa. Some are in the hills to the east, whereas others overlook the canyons that define the southern and western boundaries of the mesa. Additional sites are located across the canyon of the Agua Fria, on the rim of Black Mesa. To the prehistorian, this population of sites is a "laboratory" for studying the economic and social adaptation of these communities to the mesa and its environs (Chapter 7). To the pothunter, the sites have been a source of unnumbered artifacts that, sadly, have been obtained at the expense of the mesa's cultural, aesthetic, and scientific values.

Period 3: Late Prehistoric/Protohistoric

Several sites on Perry Mesa have been assigned to the period after the disappearance of the Perry Mesa Tradition. The time frame is roughly A.D. 1500 to 1900. The sites are thought to represent Yavapai or Apache use of the mesa (Fish et al. 1975:46-47; Pilles and Katich 1967). Among the sites is a pair of small rockshelters excavated by Pilles and Katich (1967).

Although the Perry Mesa Site Vandalism Study did not encounter any definite evidence of the protohistoric period, several features could date to this time. They include a U-shaped rock alignment near Mound B,

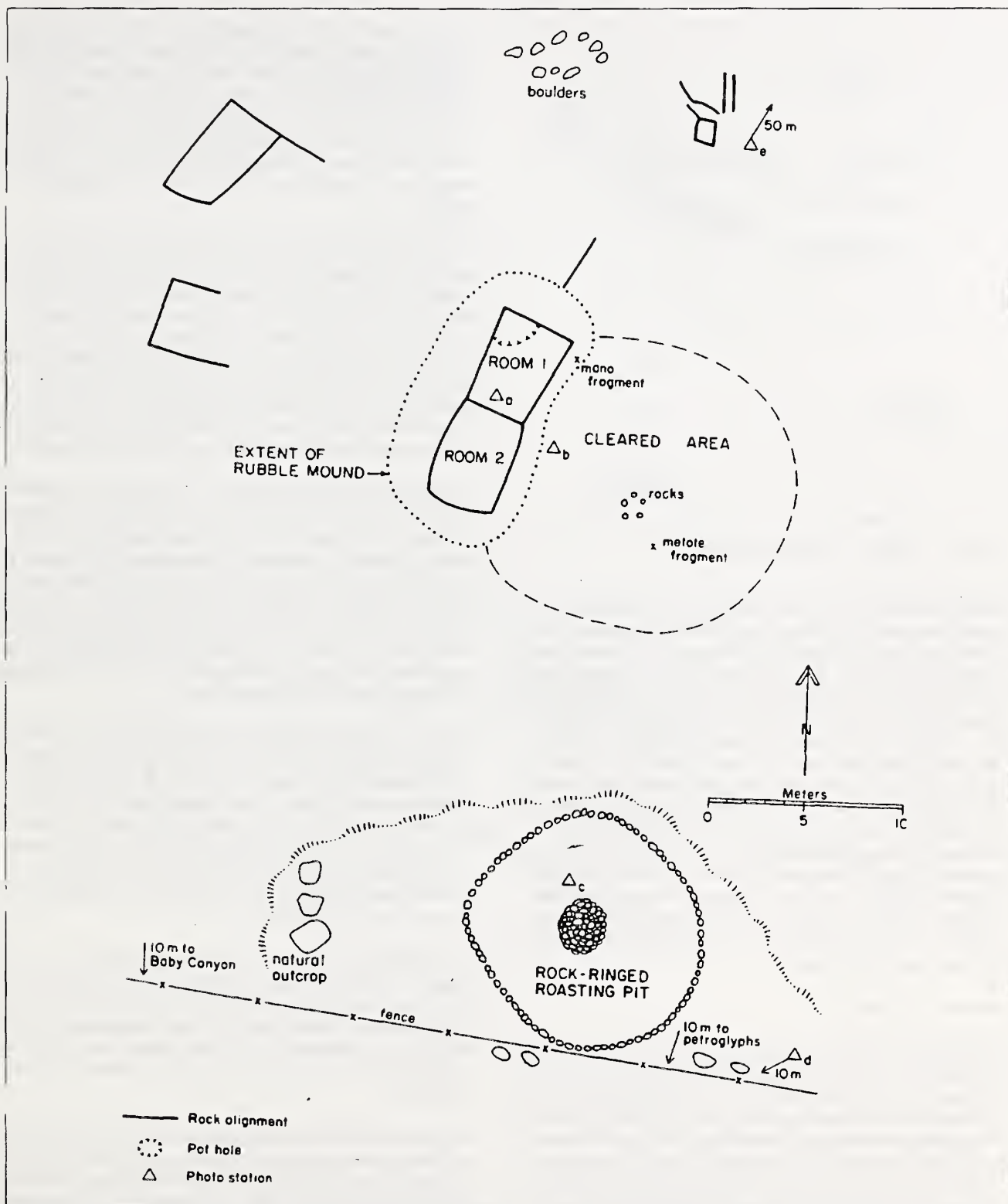


Figure 5. Map of site ARIZ N:16:26(PC).

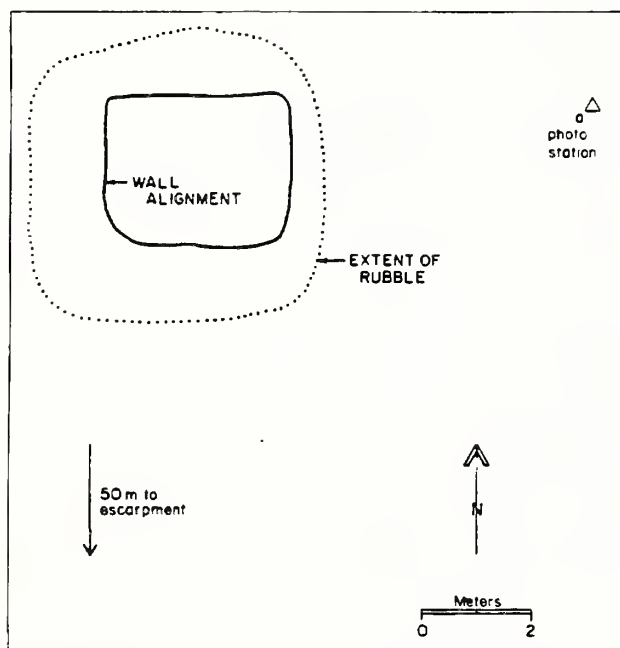


Figure 6. Map of site ARIZ N:16:53(PC).

Squaw Creek Ruin, that could be the remains of a brush kitchen (S. Wood, personal communication 1990); two roasting pits, one at Mound B, Squaw Creek Ruin and the other at ARIZ N:16:26(PC); and roughly circular structures located on Mound A, Squaw Creek Ruin and the mound at ARIZ N:16:90(PC) (Appendix A). The roasting pits are mentioned because they consist of depressions filled with rocks that, at least at the top of the deposit, are not surrounded by a matrix of sediment. One might expect the spaces between the rocks to have filled in with dirt if the features were last used some 500 years ago. The circular structures consist of rough stone walls that are up to a meter-and-a-half in height. They do not appear to have doorways, and their floors consist of the irregular surface of the mound. As discussed below, they probably relate to historic use of the mesa.

Period 4: Historic

There have been two major activities on and around Perry Mesa in the historic period, ranching and mining. William Perry, after whom the mesa is named, ran cattle there from 1880 to 1929 (Wood 1985:1). There is abundant evidence of ranching activity on the mesa, including a number of cattle tanks, a handful of windmills, and, as mentioned earlier, a disclimax association of predominantly invasive plant species. There is also a network of dirt roads, which is probably a result of both ranching and mining. Although the road

network does not, for the most part, impact archeological sites directly, it has provided access -- to pothunters, archeologists, and others. Aerial photographs of the eastern portion of the study area taken in 1957 show that the present-day road network was mostly in place at that time. Even in 1926, several roads led onto and across the mesa (Lindgren 1926:Plate 2); however, these roads are not exactly the same as those present today.

Several sites recorded by the Perry Mesa Site Vandalism Study produced evidence that does not appear to relate to pot hunting and that could relate to ranching. Site ARIZ N:16:54(PC) has a few items of trash, as well as a brush pile, that could have been left there by a cowboy (Appendix C). Similarly, the circular structures mentioned earlier as possibly protohistoric are more likely a product of ranching activity. They could, for example, have been used as pens for calves or, if sheep were grazed on the mesa, as lambing pens.

The Bradshaw Mining District, which was established in 1864, lies a few miles west of Perry Mesa, in Black Canyon. This district is at the southeastern edge of a mining area that extends to the west and northwest as far as Prescott. Intensive mining began in this area in the 1870s and continued into the twentieth century (Wilson 1990). The Richinbar Mine, which operated from 1905 to 1922, is located on Black Mesa, just across the canyon of the Agua Fria from Perry Mesa. Dunning (1959:377) states that

The original outcrop of the Richinbar vein was covered several hundred feet deep by a post-mineralization volcanic flow of basalt and was later re-exposed when the Agua Fria cut its 1,000-foot deep canyon. The mine, therefore, is sometimes used as an argument that there probably are many ore deposits similarly covered and as yet unexposed which might someday be detected by scientific instruments.

That attempts have been made to find this kind of ore deposit on Perry Mesa is indicated by evidence of tunneling that can be observed in the canyons that cut into the mesa's west front. The tunnels appear to be at the contact between the lava flows that form the surface of Perry Mesa and the underlying Precambrian rock.

Additional evidence of mining is to be found in Brooklyn Basin, located in the hilly country on the east side of Perry Mesa. There are a number of ruined historic buildings in this area, which are apparently part of the Brooklyn Mine. A visit to the library of the Arizona Geological Survey failed to uncover much information

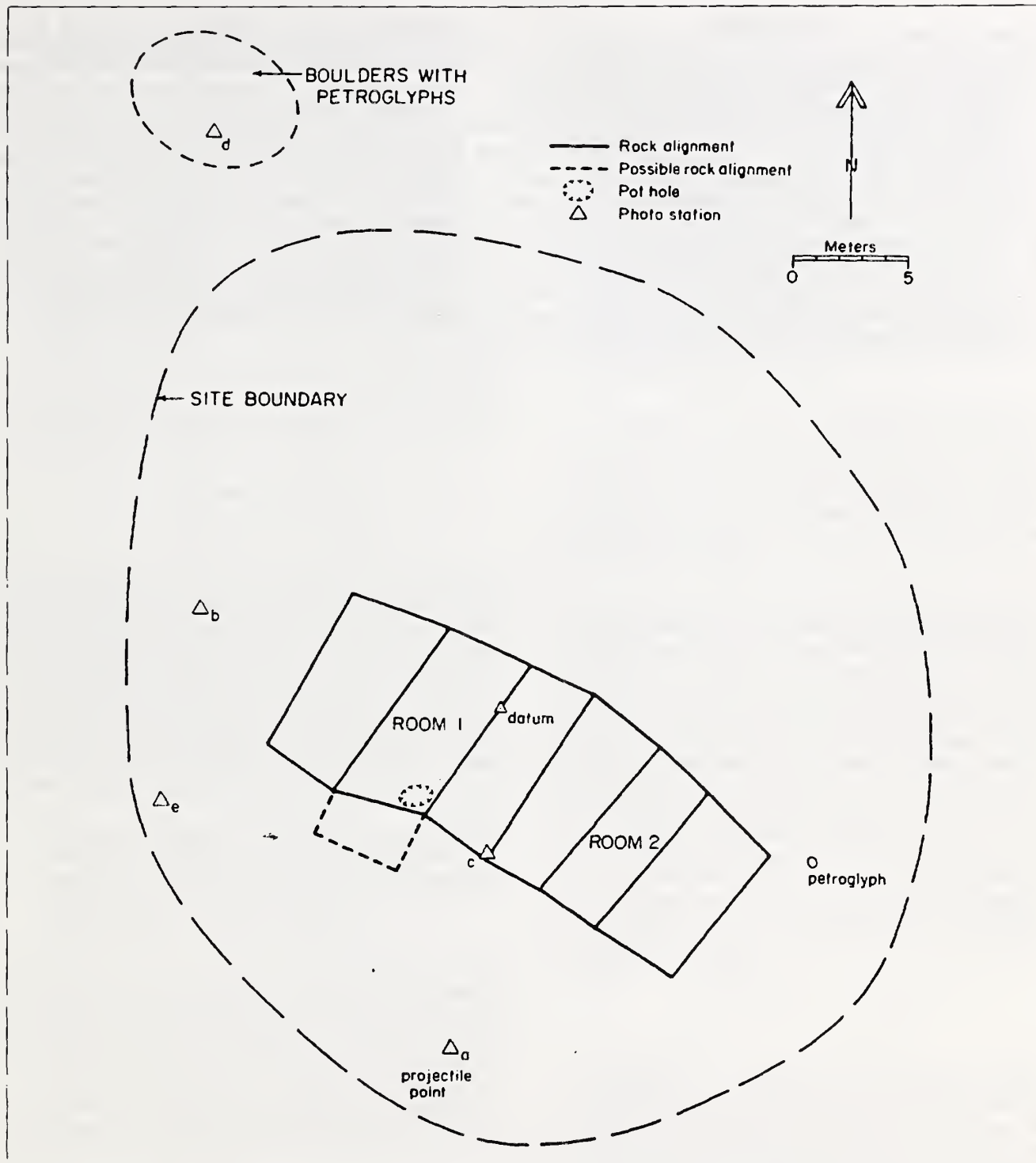


Figure 7. Map of site AR-03-12-01-37.

about this mine, except for the fact that its owners were subject to legal actions in the mid-1910s that culmi-

nated in their losing the property.

Conclusion

Four major archeological projects have contributed most of the recorded archeological sites on Perry Mesa and the better part of what we know about the area's prehistory. The most intense human use of the mesa occurred between A.D. 1100 and 1400. This occupation has been labeled the Perry Mesa Tradition. An earlier, Hohokam presence on the mesa has been documented, though not in detail. This period of use is interesting in its own right and as a prelude to the Perry Mesa Tradition. There is also limited evidence of even earlier occupation, during the Archaic. The period after that of the Perry Mesa Tradition is represented by limited data on protohistoric Yavapai (or

Apache) and historic Anglo use of the mesa. Most of what we can hope to learn about the prehistoric and protohistoric periods on Perry Mesa will be learned from the hundreds of archeological sites located there. Individually and collectively, the archeological sites on the mesa are "significant" with reference to National Register of Historic Places criteria for evaluating historic properties. Specifically, they satisfy Criterion D, in that they "have yielded, or may be likely to yield information important in prehistory or history" (National Park Service 1982:1). Although this framework for determining significance is relatively recent, it is a culmination of almost 90 years of Federal and Arizona legislative effort to protect archeological sites.

CHAPTER 2

THE PROBLEM OF ARCHEOLOGICAL SITE VANDALISM

FEDERAL AND STATE LEGISLATION AFFECTING CULTURAL RESOURCES IN ARIZONA

Cultural resources on public land are protected under a variety of laws and regulations. During the past 90 years the Federal government has developed laws and regulations, in the public's interest and at its urging, to protect these resources on public lands from destruction by Federal and Federally assisted or licensed projects as well as from individuals who might be involved in vandalizing these sites. Similarly, the State of Arizona has developed its own set of laws and regulations that deal specifically with cultural resources under the jurisdiction of the state. This expanding legislation, particularly over the past 20 years, reflects a growth of public interest and involvement in archeology and historic preservation (Fish 1981:682). The major pieces of legislation affecting cultural resources in Arizona are summarized below.

Federal Legislation

Antiquities Act of 1906

The rising public interest in the history and art of the Southwestern Indians in the 1890s was accompanied by an increasing demand for authentic prehistoric objects (Lee 1970:29). Growing numbers of collectors, dealers, exhibitors, curators, etc., coupled with the general curiosity of cowboys, ranchers and travelers, created a demand for artifactual materials recovered from ruins throughout the Southwest. Walter Hough, while conducting his 1901 fieldwork in north-eastern Arizona for the National Museum stated that,

The great hindrance to successful archaeological work in this region lies in the fact that there is scarcely an ancient dwelling site or cemetery that has not been vandalized by "pottery diggers" for personal gain (Hough 1901:590).

Many of the ruins Hough was referring to were situated on public lands where there was no system in place for the protection of antiquities. These circumstances often resulted in the looting of many ruins that went virtually unchecked until the passage of the Antiquities Act. Prior to the passage of the Act, the only means of the Federal Government for protecting cultural resources on public lands was to withdraw specific tracts from sale or entry for a temporary period (Lee 1970:39).

The Antiquities Act of 1906 was the first general Act providing protection for archeological resources and represents the first major Federal commitment to archeological preservation (Fish 1981:686). The Antiquities Act provided a mandate for those Federal

agencies that administered public lands to preserve archeological sites on these lands. It was designed to protect all historic and prehistoric sites on Federal lands, and it prohibited excavation or destruction of such antiquities without the permission (in the form of an Antiquities Permit) of the Secretary of the department having jurisdiction. This permit system provides general guidelines for undertaking research, submitting reports, and curating collections. The permitting, reporting, and curation requirements under the 1906 Act have long been used by Federal agencies as the authority to control all types of archeological research on public lands. Although much of this activity is now referred to the Archaeological Resources Protection Act (ARPA) of 1979, the Antiquities Act may still be invoked for special purposes.

The Antiquities Act also authorizes the President to declare areas of public lands as National Monuments and to reserve or accept private lands for that purpose. This executive power to set aside significant archeological and historical properties is thought by many to be the most important preservation aspect of the 1906 Act (Fish 1981:686).

The original Act served as the only statute under which criminal penalties for vandalism could be imposed. In 1974, however, the constitutionality of the penal provision of the 1906 Act was challenged. In *United States vs. Diaz*, the Ninth Circuit Court of Appeals reversed a conviction under the Antiquities Act on the grounds of vagueness. Diaz had removed several Apache ceremonial masks manufactured in 1969 or 1970 from a cave on the San Carlos Indian Reservation in Arizona. The case was argued on the basis of the antiquity of the ceremonies represented by the masks rather than the age of the stolen objects. The court held that the statute was vague in violation of the due process clause of the Constitution, noting that "nowhere here do we find any definition of such terms as 'ruin' or 'monument' (whether historic or prehistoric) or 'object of antiquity'."

Historic Sites Act of 1935

The Historic Sites Act of 1935 has been important as a declaration of national policy regarding historic preservation (Fish 1981:689). The preservation for public use of historic sites, buildings, and objects was declared a national policy by this law. The Act gives the Secretary of the Interior authority to make historic surveys, to secure and preserve data on historic sites, and to acquire and preserve archeological and historic sites. Subsequently, this authority allowed the establishment of the River Basin Survey, which surveyed and excavated hundreds of sites in advance of large

water-development projects in the major river basins of the Midwest. This Act also establishes the National Historic Landmarks program for designating properties that have exceptional value and that commemorate or illustrate the history of the United States. Applicable regulations are 36 CFR 65, National Historic Landmarks and 36 CFR 68, DOI Standards for Historic Preservation.

Federal-Aid Highway Act of 1956

Because of public concern about the destruction of archeological sites as a result of highway construction, Congress included in this Act a provision prohibiting the use of historic lands unless there was no feasible alternative. This is the first statute protecting archeological resources from the impacts of Federal or Federally financed construction projects.

Reservoir Salvage Act of 1960

The Reservoir Salvage Act of 1960 was designed to further the purposes of the Historic Sites Act by specifically extending the policy of preservation of historical and archeological data to remains that would be lost or destroyed as the result of dam construction (Fish 1981:690).

Federally constructed reservoirs represent another major source of destruction of archeological resources that cannot be resolved without a specific source of funding. The Act requires Federal agencies building reservoirs, or permitting the building of reservoirs, to notify the Secretary of the Interior when such activities might destroy important archeological, historic, or scientific data. The Secretary is authorized to conduct appropriate investigations to protect those data. The Act also authorizes agencies to spend up to one percent of their construction funds on the protection of historic and archeological resources. This is the first act to recognize that archeological sites are important in their data content, and to provide a source of funding for collecting archeological data.

National Historic Preservation Act of 1966

The National Historic Preservation Act (NHPA) establishes as Federal policy the protection of historic sites and values in cooperation with other nations, states, and local governments. Under NHPA, potential impacts to National Register and National Register-eligible properties are identified, and measures to mitigate those impacts are developed in consultation with the State Historic Preservation Officer (SHPO). The act establishes a program of grants-in-aid to states for historic-preservation activities. Subsequent

amendments designated the SHPO as the agency responsible for administering programs in the states. The act also creates the President's Advisory Council on Historic Preservation. Federal agencies are required to consider the effects of their undertakings on historic resources and to give the Advisory Council a reasonable opportunity to comment on those undertakings. The applicable regulations are 36 CFR 60, National Register of Historic Places; 36 CFR 800, Protection of Historic Properties (Advisory Council on Historic Preservation); 36 CFR 801, Urban Development Action Grant Program -- Historic Preservation Requirements; 36 CFR 61, Procedures for Approved State and Local Government Programs; and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

In 1980 a series of amendments to the National Historic Preservation Act and other preservation legislation was passed. Included are codification of portions of Executive Order 11593, requiring an inventory of Federal resources and Federal agency programs to protect historic resources; clarification that Federal agencies can consider inventory and evaluation of resources to be excluded from the one percent fund limit under the 1974 Act (only actual data-recovery activities must be included within the one percent); and authorization for Federal agencies to charge reasonable costs, for protection activities, to Federal permittees and licensees. This last provision resolved in the affirmative a controversy about whether private interests could be required to pay costs of protecting archeological and historic resources that would otherwise be destroyed by those activities.

Department of Transportation Act of 1966

This legislation directs the Secretary of Transportation not to approve any program or project that requires the use of land from a historic site of national, state, or local significance unless there is no feasible and prudent alternative to use such lands and such program includes all possible planning to minimize harm to such historic properties. The act applies to the Federal Highway Administration, Federal Aviation Administration, the Urban Mass Transportation Administration and the U.S. Coast Guard.

National Environmental Policy Act of 1969

The National Environmental Policy Act of 1969 brought protection of archeological resources within the scope of a more comprehensive plan dealing with all aspects of the human environment (Fish 1981:692). This act requires Federal agencies to prepare an Environmental Impact Statement (EIS) for every major Federal

action that affects the quality of the human environment, including both natural and cultural resources. This includes a requirement that an environmental impact statement contain information on "any irreversible and irretrievable commitments of resources which would be involved" in a proposed project.

Executive Order 11593, 1971

This document, "Protection and Enhancement of the Cultural Environment," expanded upon the national responsibilities for archeological and historical properties outlined in the National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969 (Fish 1981:692). Executive Order 11593 requires Federal agencies to take a leadership role in preservation by surveying all lands under their ownership or control and nominating to the National Register all properties that appear to qualify. It also requires agencies to avoid inadvertently destroying such properties prior to completing their inventories (codified as part of 1980 amendments to the National Historic Preservation Act).

Archeological and Historic Preservation Act of 1974

Congress amended the Reservoir Salvage Act to extend the provisions of the act to all Federal construction activities and all Federally licensed or assisted activities that will cause loss of scientific, prehistoric, or archeological data. It requires the Secretary of the Interior to coordinate this effort and to report annually to Congress on the program. It permits agencies either to undertake necessary protection activities on their own or to transfer to the Secretary up to one percent of the total authorized for expenditure on a Federal or Federally assisted or licensed project to enable the Secretary to undertake the necessary protection activities.

American Indian Religious Freedom Act of 1978

This Act makes it a policy of the government to protect and preserve for American Indians, Eskimos, Aleuts and Native Hawaiians their inherent right of freedom to believe, express, and exercise their traditional religions. It allows them access to sites, use and possession of sacred objects and the freedom to worship through ceremonial and traditional rights. It further directs various Federal departments, agencies, and other instrumentalities responsible for administering relevant laws to evaluate their policies and procedures in consultation with Native traditional religious leaders to determine changes necessary to protect and preserve Native American cultural and religious practices.

Archaeological Resources Protection Act of 1979

In 1979, in response to increased threats to archeological sites from looting and problems with enforcement of the Antiquities Act, the Archaeological Resources Protection Act (ARPA) was passed. The statute applies mainly to Federal land-managing agencies and to the protection of archeological sites on public lands; however, it also prohibits interstate and international commerce or transportation of archeological remains obtained in violation of state or local statutes.

This act supplements the provisions of the 1906 Antiquities Act. The law makes it illegal to excavate or remove from Federal or Indian lands any archeological resources without a permit from the land manager. Permits may be issued only to educational or scientific institutions, and only if the resulting activities will increase knowledge about archeological resources. Major penalties for violating the law include jail terms of up to five years and fines as large as \$100,000. The act authorizes the Secretary of the Interior to promulgate regulations for the ultimate disposition of materials recovered as a result of permitted activities. Permits for archeological work on tribal lands cannot be issued without the consent of the Indian Tribe. The applicable regulation is 43 CFR 7

State of Arizona Legislation

The Arizona Antiquities Act of 1960

The Arizona Antiquities Act (1960) states that no person without an appropriate permit,

shall excavate in or upon any historic or prehistoric ruin, burial ground, archaeological or vertebrate paleontological site, or site including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on lands owned or controlled by the state of Arizona, or any agency thereof.

Furthermore, the law prohibits the collection of any archeological specimen situated on lands owned or controlled by the state or any agency of the state without obtaining a permit authorizing the activity. "Archaeological Specimen" is defined as,

any item resulting from past human life or activities which is at least one hundred years old including petroglyphs, pictographs, paintings, pottery, tools, ornaments, jewelry, textiles, ceremonial

objects, weapons, armaments, vessels, ships, vehicles, and human skeletal remains. Archaeological specimen does not include arrowheads, coins or bottles.

The law also contains criminal codes that deal with the permitting process and the defacing or damaging of archeological sites including petroglyphs and pictographs.

Arizona Revised Statutes 41-865 of 1990

This newly enacted legislation prohibits the excavation and removal of human burials and associated funerary objects from private lands without notification of state authorities (Arizona Antiquities Act 1960). This bill requires that landowners, lessees, or their agents inform the Director of the Arizona State Museum (ASM) of the discovery of human remains and objects.

Arizona Revised Statutes 41-844 of 1990

This bill prescribes notification procedures upon the discovery of archeological, paleontological, and historical sites on state lands, or by any state agency, or by any county or municipal corporation (Arizona Antiquities Act 1960). The bill includes a process whereby the Director of the ASM notifies and consults with all interested parties on the disposition of human remains and funerary objects. Included in the consultation process are issues of reburial, curation, and scientific analysis. Those groups with established cultural affinity are provided final decision-making authority in the disposition of the remains. If no cultural affinity can be established, the Director decides the appropriate disposition and treatment of remains.

THE UNITED STATES VS. JONES, JONES, AND GEVARA

In December 1977 a Phoenix hunter encountered several individuals digging in ruins on Perry Mesa. The unidentified men were armed and threatened bodily harm. Upon his return to Phoenix, the hunter reported the incident to the authorities. Within the week, three residents of Utah observed digging in ruins were arrested by officers of the Tonto National Forest. These men, Kyle R. Jones, his brother Thayde L. Jones, and Robert E. Gevara were arraigned and ordered to stand trial before Judge William P. Copple in U.S. District Court. "Jones, Jones, and Gevara," as the case came to be known, were charged with theft and depredation of government property (Tonto National Forest files).

In April 1978 Judge Copple dismissed the charges, stating that there was no law under which persons who are accused of stealing artifacts from government land in Arizona could be prosecuted. Copple said that the government was prevented by a higher court decision from prosecuting the trio under these charges. He further argued that the only alternative left to the government was prosecution for a violation of the Antiquities Act of 1906. Unfortunately, the U.S. 9th Circuit Court of Appeals had previously ruled that portions of the Act are unconstitutionally vague (*Arizona Republic*, 13 April 1978).

In January 1979 U.S. Attorney for Arizona, Michael D. Hawkins, asked the U.S. Court of Appeals in Los Angeles to rule that thieves who loot American Indian archeological sites may be prosecuted for stealing government property instead of under the relatively lenient Antiquities Act of 1906. This request grew out of the Jones, Jones, and Gevara case. The artifacts recovered from the defendants had been appraised by Forest Service archeologists at \$6,000 to \$8,000 (*Arizona Daily Star* 24 December 1977; *Albuquerque Journal* 14 January 1979).

During March 1979 the House Interior Committee heard witnesses on the proposed Archaeological Resources Protection Act, which would become law later that year (*Arizona Republic* 20 March 1979).

In June 1980 K. Jones and Gevara entered guilty pleas to misdemeanor charges and T. Jones to a felony charge under the newly enacted ARPA legislation. Judge Copple ordered all three defendants to pay \$1,000 fines and sentenced them to terms of 6 to 18 months in jail (*Phoenix Gazette* 3 June 1980; *Newsweek* 23 June 1980).

As a powerful deterrent to the looting of archeological sites on public lands for individual profit, ARPA is considered to be the most important victory for the archeological community and Federal land managers (Fish 1981:695). The publicity surrounding the case against Jones, Jones, and Gevara contributed to the enactment of this legislation (*Arizona Republic* 29 August 1982). The site vandalized by Jones, Jones, and Gevara is AR-03-12-01-44; by chance, this ruin was included in the sample of sites investigated by the Perry Mesa Site Vandalism Study (Appendices C and D).

PREVIOUS STUDIES OF SITE VANDALISM

Several projects undertaken in the Southwest during the 1980s demonstrate a nascent willingness on the

part of Federal and state land-management agencies to sponsor research on the problem of archeological site vandalism. Four such studies, each including field research, were located in the Four Corners country of southeastern Utah and southwestern Colorado. (1) Nickens et al. (1981) looked at the occurrence of vandalism at known sites in a large (702,000-acre) planning unit in southwestern Colorado; they employed existing site data, data collected during revisits to sites that had been recorded as undamaged, and interviews with informants (known collectors). (2) Honeycutt and Fetterman (1985) studied vandalism of sites in a fairly large (ca. 17,000-acre) study area on Alkali Ridge in southeastern Utah; they conducted a three percent sample survey of the area and based their analysis on newly recorded sites in their sample units. (3) Simms (1986) researched vandalism in two small units (totalling ca. 2,000 acres) in southeastern Utah; data were collected through inventory survey, recording of known sites, and rerecording of sites. (4) Wylie, Nagel, and Kvamme (Wylie and Nagel 1989; Kvamme 1990) are conducting a study of vandalism in San Juan County, Utah; they have developed a "model" on the basis of data from previously recorded sites throughout the county and returned to a sample of sites in a portion of the county to collect data to test the model.

Although these studies are not in complete agree-

ment, together they identify several variables that may be significant in explaining the relative vulnerability of different archeological sites to damage by vandals. These variables include (1) site morphology -- sites with surface architecture being more likely to suffer damage than those with pit houses, and sites with middens showing greater damage than those without, (2) distance to the nearest road -- probability of damage decreasing as distance increases, and (3) site setting -- sites in rock shelters being more extensively damaged than open sites.

Two other discussions of vandalism should also be mentioned. As part of the Museum of Northern Arizona's EBASCO project, Fish et al. (1975) examined the relationship between site type and occurrence of vandalism at sites on Perry Mesa and Black Mesa and in nearby portions of the Agua Fria's canyon. They also considered the role of improved access in increasing the vulnerability of sites to pot hunting. Their findings are directly relevant to the Perry Mesa Site Vandalism Study.

The second discussion, by Christenson et al. (1988), outlines a research strategy for measuring the vulnerability of sites to vandalism, identifying protection priorities, and evaluating protection strategies. It includes a list of site characteristics likely to influence a site's vulnerability to vandalism.

CHAPTER 3

ORAL HISTORY

As noted earlier, the Perry Mesa Site Vandalism Study has been guided by five general research questions. Four of these (italicized below) are especially pertinent to the oral history phase of the study.

1. *What is the current status of site condition and pot hunting activity in the Perry Mesa locality?*
2. *What is the history of archeological site vandalism in the study area?*
3. *What patterns may be perceived in the spatial and temporal distribution of morphological site types within the study area, and how do these patterns relate to site vandalism?*
4. *What makes some sites more vulnerable to vandalism than others?*
5. *What can be said about past protective measures for archeological sites within the study area; what kind of future monitoring plan could be implemented to ensure protection of these nonrenewable cultural resources?*

The oral history study involved interviewing persons with a variety backgrounds. Among these were individuals from state and Federal agencies, including managers and archeologists from:

1. USDA-Forest Service -- Coconino, Prescott, Tonto, and Coronado National Forests;
2. Bureau of Land Management -- Phoenix, Kingman, Moab (the latter regarding a site-vandalism study on Alkali Ridge, Utah) and the Utah State Office (regarding the study of vandalism in San Juan County, southeastern Utah, mentioned in Chapter 2);
3. Arizona State Land Office;
4. State Historic Preservation Office;
5. Arizona Archaeological Society -- Yavapai, Desert Foothills, Verde Valley, and Phoenix chapters;
6. Arizona State Museum;
7. the several professional archeologists who have conducted survey and excavation on Perry Mesa;
8. local ranchers;
9. avocational archeologists who have familiarity with Perry Mesa; and

10. pothunters who have carried out their activities on Perry Mesa.

Interviews were initiated by correspondence and telephone calls, followed in most cases by face-to-face contacts.

Interviews were relatively informal and open ended and were aimed at eliciting data specified in the RFP, the SWCA proposal, and other items developed as interviews proceeded. Formal questionnaires were not used, although an *aide memoire* was developed to provide some standardization and comparability in questions posed to both archeologist/administrators, on the one hand, and pothunters on the other. General data solicited from pothunters or former pothunters included background biographical data (social, economic, education, residence, etc.); degree of interest in pot hunting (how long doing it, amount of time spent); attitude toward collecting (for what purpose: profit from sale, personal enjoyment, etc.); nature of activity on Perry Mesa; attitude toward state and Federal agencies, professional archeologists, Federal and state antiquities laws, government efforts to protect sites; interest in joining avocational groups; and attitudes toward legislative efforts aimed at protection.

Data elicited from archeologists and administrators included length of residence in Arizona; perceived levels of pot hunting; communities from whence pothunters come; knowledge of general and specific incidents of Perry Mesa vandalism; past efforts to protect sites; effectiveness of ARPA and state antiquities laws, state legislature, Arizona Archaeological Society, museums, Archaeology Week, Site Steward Program, Arizona Archaeological Advisory Commission, education in public schools, and other measures of protection such as signs, aerial surveillance, patrols, etc.

Interviews took place during the summer and fall of 1990. A total of 22 persons or groups was interviewed, most in person but some by telephone and letter. There were three pothunters or former pothunters, four chapters of the Arizona Archaeological Society, two former special agents for Tonto National Forest, four archeologists with National Forests, one archeologist with the State Historic Preservation Office, two archeologists with the State Land Office, one site steward, two archeologists with the Bureau of Land Management, and three other archeologists with experience on Perry Mesa and not connected with Federal or state agencies in Arizona.

All respondents were guaranteed anonymity, and their names are not given in this report.

POTHUNTERS OR FORMER POTHUNTERS

As has been noted, three pothunters or former pothunters were interviewed. The problems of locating vandals who would be willing to be interviewed are obvious.

One person, allegedly still actively pot hunting, was very confrontational. He claimed he had "a right" to dig on public lands since "they belong to the public." He was adamant that no regulations apply to private lands (this interview was conducted before the passage of recent State of Arizona laws prohibiting the removal of human remains from private lands). He felt that all efforts to protect archeological sites, be they governmental or educationally oriented, were illegal and ineffective. He had no interest in joining an avocational archeological group.

Another pothunter, or perhaps former pothunter, a former Air Force pilot, allegedly spotted Perry Mesa ruins from the air and then returned to dig. He no longer lives in Arizona and has not dug on Perry Mesa since 1964. His pot hunting activity was confirmed in an interview with another former pothunter and professional archeologist, to whom he admitted his past activities. He provided no data on the other questions posed in the interview.

The third individual has lived in Arizona for 56 years just south of Perry Mesa in the New River and Phoenix areas. He began visiting ruins on Perry Mesa in 1948 and engaged in digging in the early 1950s. His illegal activities stopped in the late 1960s, and he has become an ardent supporter of efforts to preserve cultural resources. His interest in pot hunting was quite serious, in that he dug for the enjoyment of obtaining artifacts, yet he kept records and photographs and maps of the Perry Mesa sites and artifacts during his activities. He never sold any of his collection of artifacts, but did buy items, including an illegal collection allegedly made by a former Maricopa County sheriff.

He believes that most of the Perry Mesa vandals come from the Phoenix area.

This individual has never joined an avocational group, preferring to learn about archeology from professionals or from his own reading. He is now a strong supporter of legislative efforts aimed at protecting sites on Federal and state lands, but does not believe these laws should include private land (again, this interview was conducted prior to enactment of 1990 state laws pertinent to private lands). Finally, he believes that the Federal Archaeological Resource

Protection Act (ARPA) and the state Site Steward Program are worthwhile, but that the key to reducing vandalism ultimately must involve public education at all levels.

LOCAL RANCHERS

Only one rancher was interviewed. He has lived in the Perry Mesa vicinity since 1971 and has witnessed a considerable amount of vandalism on Perry Mesa over the years. Prior to 1980, according to this individual, many people from the Prescott, Humboldt, and Phoenix areas came to dig in ruins, mainly for profit. This type of activity also included a group of eight to ten men from Utah who camped on Perry Mesa and systematically cleaned out rooms.

The rancher believes that Federal and state antiquities laws have been effective in controlling vandalism since about 1980, now that pothunters are aware of the laws. That is, he believes that the biggest deterrent to vandalism is when vandals are aware of the consequences of breaking the law. Since 1980, according to this respondent, Perry Mesa has been visited only by an occasional person making surface collections.

FOREST SERVICE SPECIAL AGENTS

Two special agents, formerly with the Tonto National Forest, were interviewed by telephone. Both had to be reminded where Perry Mesa was located, and both claimed that they did not have active investigations on Perry Mesa when they were assigned to the Tonto. They had no comments regarding other questions asked.

SITE STEWARD PROGRAM

A present member of the Site Steward Program was interviewed. This individual has a BA degree in anthropology and is interested in archeology avocationally, although she does not belong to the Arizona Archaeological Society. She is a pilot and makes about three flights a year over Perry Mesa. She has seen alleged vandals camped at Los Mujeres (Squaw Creek) Ruin but, because she lacks any radio contact with law enforcement agencies, believes that little follow-up can be accomplished from the air.

She believes that the only efforts to control vandalism that have potential effectiveness are Archaeology Week and the Site Steward Program. She does not know the communities from which vandals come, nor of any specific incidents of vandalism on Perry Mesa, nor of past efforts to protect sites there.

At the conclusion of the interview, after indicating her support for archeology, she indicated that she guessed that "it doesn't matter if some sites get vandalized since there are so many."

ARIZONA ARCHAEOLOGICAL SOCIETY CHAPTERS

Four chapters of the avocational Arizona Archaeological Society were interviewed by mail and/or in person. These included Yavapai, Phoenix, Verde Valley and Desert Foothills. Only one chapter, Desert Foothills, responded. That is, one member replied; he received no comments from other members. Of interest was the allegation that, ca. 35 or 40 years ago, a pothunter hired a black man to dig in the Perry Mesa ruins. Beyond that, the respondent made some suggestions of other possible contacts. Desert Foothills Chapter provided no information relative to other solicited questions.

One would have expected members of the avocational chapters in the area to offer suggestions as to the control of vandalism on Perry Mesa or elsewhere; none were forthcoming.

Several avocational historians and heritage preservationists in the Prescott area also were contacted. They appeared to be interested only in the preservation of standing historic structures.

PROFESSIONAL ARCHEOLOGISTS AND ADMINISTRATORS

Ten professional archeologists with knowledge of Perry Mesa were queried; all but one responded. Some of these are engaged more in archeological administration than in archeological research. Among the nine, the average length of residence in Arizona was 24 years. Two now reside outside of Arizona. Seven of the nine previously had done archeological survey and/or excavation on Perry Mesa. These included independent surveys beginning in 1964, surveys conducted by the Museum of Northern Arizona in 1974 (Fish et al. 1975) and survey and excavation along the Arizona Public Service Company transmission line between 1970 and 1974 (Fiero et al. 1980). Four archeologists who worked on these projects were interviewed. Seven archeologists now are employed by state or Federal agencies: State Land Office, Arizona State Museum, U.S. Forest Service, and Bureau of Land Management. These individuals worked on Perry Mesa from 1964 to 1984, with emphasis in the 1970s.

As might be expected, answers to questions were

varied. In response to a question about perceived levels of pot hunting, some noted that it had been very extensive, especially in the 1960s and 1970s, and that there is by now a gradual decrease. During times of heavy pot hunting, there was a gradual increase in nonsystematic vandalism -- as often as every week in dry weather. Half of the 30-to-40-room sites and most of the larger sites were vandalized. One respondent thought that, although the degree of vandalism was extreme in 1972 and 1973, it also was rampant in the late 1950s.

The several respondents in this category reported vandals coming from a number of communities around Perry Mesa as well as from more far flung areas, including Prescott, Phoenix, Black Canyon City, Dewey, Mayer, Camp Verde, New River, Cordes Junction, Rock Springs, Young and Tempe in Arizona, as well as from California and Utah.

Knowledge of general and specific incidents of vandalism on Perry Mesa was extensive. Several mentioned the Jones, Jones, and Gevara case (see Chapter 2), digging in Pueblo Pato, pot hunting while archeologists were surveying the APS transmission line, much signs of fresh pot hunting, and even a case of an individual who worked by himself and carpeted his shoes to hide his tracks as he walked to Perry Mesa. One archeologist reported that he knew of "specific persons who did pot hunt the sites" on Perry Mesa but did not identify them. Another also noted that when Bruce Babbitt was governor, he put state lands off limits and tried to get Department of Public Safety officers and their patrol cars to intercept vandals after they were spotted by aircraft; unfortunately the patrol cars "high-centered" on Perry Mesa roads and were not able to reach the vandals. Similarly, attempts were made by the Bureau of Land Management to enlist the Air National Guard to carry out surveillance on Perry Mesa, but no formal program was ever developed.

Professional respondents reported very little in the way of past efforts to protect Perry Mesa sites. Signs were placed at ruins in the 1970s, but these were soon defaced by bullet and shotgun holes and torn down. The Black Canyon Search and Rescue group supposedly patrolled Perry Mesa at one time. Beyond that, very little was done in the past to protect sites.

The questions regarding the degree of effectiveness of various groups or projects to control pot hunting met with varying responses. Most felt that the Federal Archaeological Resources Protection Act (ARPA) was more effective than state laws, which seem to have had little if any enforcement. ARPA was thought to "have put teeth in the law" and was effective when

prosecuted and publicized. The Arizona State Legislature was unanimously thought to have a negative attitude toward controlling vandalism, and to have had no effect. As for the avocational Arizona Archaeological Society and its several chapters, one person thought they were doing an excellent job in efforts to control pot hunting, whereas the others thought the only positive aspect of the society was the Site Steward Program. The Site Steward Program was thought to be quite effective, except in the Phoenix area; the program needs more publicity. Museums were generally thought to be ineffective, with little or no efforts to control vandalism. The Archaeological Advisory Commission was thought to be not visible, and one respondent thought the Commission was groping for something to do. Other measures that respondents commented upon included a more extensive use of *interpretive* signs explaining the cultural context and significance of the ruins and their value as an irreplaceable cultural resource, rather than the usual *negative* signs that some agencies used. Most respondents recognized the need for education in public schools from kindergarten through college

In concluding this section of the oral history study, the remarks of one respondent are worth quoting:

My first experience with Perry Mesa was in 1957 and lasted off and on until 1960. Pot hunting in the late '50s was rampant. There were numerous families in the Prescott, Dewey, Mayer area that regularly went out to various sites. Other families came to the area from Phoenix. One of the "best" areas was the Bloody Basin area (this meant Perry Mesa for most, although similar sites were known to exist on eastward to the Verde River). A variety of sites were known to most people, however, the big pueblos were the ones that were most vandalized because everyone knew they were loaded with quality artifacts. The changes that took place between 1957 and 1960 were dramatic. I estimate that when I first saw the sites in 1957, approximately 30 of the rooms had been "dug." We estimated that this vandalism took place between 1930 and 1957. How much took place between 1950 and 1957 is unknown, but I would guess most of the 30. Between 1957 and 1960 another 30 of the rooms were vandalized. All that damage in just three to four years! One didn't have to dig to find artifacts. The surface around most pueblos had hundreds of projectile points, stone axes, shell beads, turquoise pendants, manos and metates, and a large variety of other artifacts. Another source of artifacts was the backdirt of pothunters. Most only dug the walls of rooms and along the floors. The central areas were thought to contain

too low a percentage of finds. Pot hunting and surface collecting was looked upon as an admirable thing in the 1950s by most people. Various families built up huge collections, and "ribbons" were given at the Yavapai county fair for the best. Artifacts were placed in concrete in walls and fireplaces. Some people were strictly commercial, buying and selling collections, highgrading collections for one or two prime artifacts, and making fakes. ... protection efforts during the 1950s were minimal. Only two sites had "Antiquity signs," and patrols were almost non-existent.

CONCLUSIONS

The general consensus of respondents, especially professional archeologists, was that ARPA needs more "teeth," that other efforts to protect sites have been ineffective (except perhaps for the Site Steward Program), that the more accessible and visible the sites are, the more vandalism can be expected, and that improving and expanding public education is most important.

A few comparative comments may be in order regarding these conclusions. Carnett (1990) has recently summarized data in the LOOT database pertaining to cases brought since the passage of ARPA in 1979. LOOT, "a listing of incidences of looting and vandalism on Federal lands," is maintained by the National Park Service (Society for American Archaeology 1990:14). Carnett (1990) reports that, for the period from 1979 through 1989, of the 58 cases prosecuted, 52 ended in guilty verdicts. Only 11 cases resulted in jail sentences, ranging from 7 days to 6 months; the remainder ended in suspended sentences, probation, or fines ranging from 15 cents to \$21,500. It is obvious that ARPA is only minimally effective. Most vandals are not going to worry about the consequences of being arrested, except perhaps for confiscation of materials.

The recent Taos Conference on archeological looting and vandalism, which was sponsored by the Society for American Archaeology (1990), reported that more research on the subject is needed and that the oral history is but one small step in acquiring some of the data needed. The symposium also indicated that protection efforts must be increased, enforcement of the various antiquities laws must be coordinated, and education and training must be improved. Although the report indicated that information about cultural resources must reach the public, agencies must improve coordination with Native Americans, professional societies, and preservation organizations. It was intimated that ARPA was more effective than the LOOT study mentioned above would suggest. Respondents to the Perry

Mesa study were not overly impressed with the effectiveness of ARPA, and much less with the Arizona antiquities law.

It is clear from the Perry Mesa respondents that law enforcement is not adequate, and this was emphasized in the Taos Conference: "law enforcement agents in their present number cannot adequately patrol all of the land areas in the federal system (Hutt 1990:26)."

In regard to ARPA, the same author (Hutt 1990:26) said, quite significantly, that "much of the public still perceives that law as nothing more than an infringement on their rights to public property to pursue their hobby." This also was emphasized in the Taos study by Schneider (1990:30), who said, "most Americans believe they have a right to collect and own antiquities." The same attitude was noted by one of the pothunters interviewed in the Perry Mesa study.

A study of vandalism in San Juan County, Utah (Wylie and Nagel 1989) certainly indicated that vandalism occurred most frequently on sites that were easily accessible and at sites that were most visible. This was also echoed in a study of vandalism in southwestern Colorado (Nickens et al. 1981). The latter study also noted that ARPA was not taken seriously in that area until more recent efforts at enforcement. The same indications were also found in a study of vandalism on Alkali Ridge in southeastern Utah (Honeycutt and Fetterman 1985).

For Perry Mesa, it is clear that major damage already has occurred; yet, there are still much scientific data available in most of the sites, despite the onslaught of pot hunting. The remaining research potential of the Perry Mesa sites, along with steps that should be taken to preserve those resources, are discussed later in Chapter 7.

CHAPTER 4

ARCHEOLOGICAL METHODS AND RESULTS

METHODS

This discussion of project methods is arranged topically rather than chronologically. The final research design is not presented in full and as a unit; instead, portions of the design are repeated where appropriate for the discussion. As noted earlier, the methods of the Perry Mesa Site Vandalism Study changed several times and in several ways as the research was planned and implemented. These changes were made in response to improved knowledge about the archeological resources of Perry Mesa.

Although the Request for Proposals (RFP) for the Perry Mesa study stated that survey of new areas might be undertaken, we chose instead to concentrate on known sites. A majority of survey time is generally spent walking across land where no sites are located. Much additional time must be spent recording newly discovered sites. Also, it is likely that a fairly extensive survey would be required to provide adequate data for a convincing test of our conclusions concerning site vandalism. For these reasons, we adopted a site-oriented approach, that is, one that would allow us to proceed directly to known sites that would provide data relevant to a study of site vandalism.

Study Area

Tonto National Forest's solicitation for the Perry Mesa Site Vandalism Study indicated that the research was to be carried out on Perry Mesa (Figure 1). The list of archeological sites on Perry Mesa that accompanied the solicitation did, however, include several sites that were not on the mesa. Among these were sites along the Agua Fria River in the canyon to the west of Perry Mesa; sites on Black Mesa, which forms the west side of the Agua Fria's canyon, across from Perry Mesa; sites on the escarpment below the mesa's west rim, that is, between the mesa proper and the Agua Fria, and sites at the bottom of the major canyons that cut into the west side of the mesa.

In consultation with Tonto National Forest's Archeologist, we defined the study area as including only the top of Perry Mesa and not these other locations. The decision to eliminate the escarpment and canyon-bottom areas, which could be considered part of Perry Mesa, was justified primarily on the basis of access. Most visitors to sites on the mesa top travel there by way of the Bloody Basin Road, which crosses the north side of the mesa; sites below the rim, on the other hand, can be approached from the mesa top or from below, that is, by way of the Agua Fria's canyon. We felt that including a variable relating to access from two directions would complicate the study unneces-

sarily, especially considering our ability to "control" the variable of access to the mesa top.

Site Typology

The RFP for the Perry Mesa study (Tonto National Forest 1989) identified seven site types that were to be included in the project. These types, along with their Tonto National Forest number codes, are as follows:

- 1, residential;
- 2, resource procurement;
- 7, defensive;
- 8, communication (rock art);
- 11, temporary residential (field house);
- 16, multiple function; and
- 18, probable habitation (pit house).

According to the RFP, an eighth type, the agricultural site (Type 4), could be disregarded by this study. The multiple-function category was also ignored, because few sites were assigned to it, and because many sites that could presumably be considered "multiple function" were instead assigned to two or more of the other site categories.

Although the names imply that these are functional site types, we treated them as morphological types, that is, as labels applied to physical characteristics of sites. Data available when the research design was being developed (Tonto National Forest 1989: Attachment J.3) suggested that two of the site types, "residential" and "temporary residence," were similar, in that both applied to sites with evidence of surface masonry architecture. It appeared that the two types were distinguished primarily on the basis of size: residential sites tend to have no fewer than four or five rooms and temporary residence sites no more than four or five rooms. Most recorded sites on Perry Mesa with architecture have fewer than 10 rooms. To make a typological division within this size class at about 5± rooms seemed arbitrary. This is especially so, considering that one would expect "measurement error" of at least two to four rooms in estimating the size of these sites on the basis of surface evidence alone. It seemed reasonable, therefore, to combine the two categories into one site type -- 1/11: residential/temporary residence -- that includes sites with from one to ten rooms.

As discussed earlier (Chapter 1: Prehistory and History of Perry Mesa), it may be possible to divide these small sites into two functional categories, field houses and outliers. This is not possible, however, with the survey data that are available for these sites.

Table 1. Sites Included in Field Study.

<u>SITE TYPE</u>	<u>SITES IN SAMPLE</u>	
	<u>SITE NAME/NUMBER</u>	
1, residential (>100 rooms)	Squaw Creek Ruin Pueblo La Plata	Pueblo Pato
1, residential (10-100 rooms)	ARIZ N:16:16(PC) AR-03-12-01-32 AR-03-12-01-44 ARIZ N:16:120(PC) AR-03-12-01-31 ARIZ N:16:44(PC) NA 11682	NA 11439 NA 11792 ARIZ N:16:17(PC) NA 13295 ARIZ N:16:80(PC) *ARIZ N:16:45(PC) *ARIZ N:16:28(PC)
1/11, residential/ temporary residence (1-9 rooms)	NA 11687 {ARIZ N:16:116(PC)} [NA 11444] NA 13319 NA 11414 NA 11793 NA 11785 N:16:11(PC) [ARIZ N:16:124(PC)] ARIZ N:16:53(PC) NA 11436	AR-03-12-01-37 AR-03-12-01-39 ARIZ N:16:26(PC) [NA 13296] [ARIZ N:16:106(PC)] ARIZ N:16:40(PC) [ARIZ N:16:55(PC)] NA 13314 ARIZ N:16:101(PC) ARIZ N:16:54(PC)
2, resource procurement	N:16:121 N:16:111	NA 13330 NA 13328
7, defensive	NA 13350 ARIZ N:16:28(PC)	ARIZ N:16:45(PC) Site F(PMSVS)
8, communication (rock art)	NA 11647 NA 11415 NA 13338 N:16:28	*Pueblo Pato *NA 13330 *Squaw Creek Ruin *ARIZ N:16:26(PC) *AR-03-12-01-37
18, probable habitation	AR-03-12-01-54 NA 13304	NA 13316 ARIZ N:16:9(PC)

ADDITIONAL SITES**

1, residential (10-100 rooms)	NA 11418 NA 11490	ARIZ N:16:12(PC)
1/11, resid./temp. residence (1-9 rooms)	NA 13346 ARIZ N:16:90(PC) Site A(PMSVS)	Site E(PMSVS) Site G(PMSVS) Site H(PMSVS)
2, resource procurement	Site C(PMSVS)	Site D(PMSVS)

* site selected under another category
 [] site not relocated

{ } site not recorded, "left over" at end of fieldwork

** Sites not in sample selected for study, but visited and recorded in cursory fashion.

Sample Design

A stratified random sample of sites was selected for detailed study (Table 1). The universe of inventoried sites was stratified on the basis of the modified version of the site typology discussed earlier. For the purpose of sampling, sites assigned to more than one type were considered two or more times, once for each type. Sites were chosen at random with the aid of a random number table. A larger number of sites than necessary was selected, to provide alternates in case some of the sites could not be relocated.

In general, the adequacy of a sample is a function more of sample size than of sampling rate, at least when the number of sites being selected is small. A minimum of four sites was selected from each of the sampling units identified. In addition to being a function of sample size, the adequacy of a sample depends on its homogeneity. In other words, the number of sites required depends on the amount of variation in the sites. Such variability is difficult, if not impossible, to estimate a priori. For this reason, a two-phase sampling strategy was devised. That is, findings from an initial sample of sites were to be used to evaluate the sampling scheme. Based on this preliminary analysis, additional field effort would, if possible, be allocated to the most variable categories. During this second phase of sampling, up to 10 sites were to be added to the most variable sample groups or to groups with the largest numbers of sites. Unfortunately, recording of the initial sample of sites exhausted the time available for fieldwork, so a second phase of sampling was not implemented.

The sites that were selected for the sample were listed in the Final Research Design (Ahlstrom et al. 1990: Table 1). At the suggestion of Scott Wood, Archeologist for Tonto National Forest, substitutions were made for several sites that did not appear to be appropriate for the study. Other substitutions were made for sites that could not be relocated in the field. In most cases, the replacement site was the next in the appropriate list of sites chosen at random.

The sample included seven site groups. In the case of two of these groups, all known sites were included in the sample:

1. Type 1, Residential (>100 rooms). As specified in the solicitation, three large sites (site complexes) were studied: the Squaw Creek Ruin, Pueblo La Plata, and Pueblo Pato. At the time that the sampling design was developed, we thought that these sites constituted the entire universe of the largest class of recorded sites (those with well over 100 rooms). We argued that,

because sites of this size are scarce, it would be appropriate to study all of them, even if this were not a requirement of the solicitation. Our research and data tabulated by Tonto National Forest (1989: Attachment J.3) suggest that ARIZ N:16:45(PC) and the pair of sites, NA 11439 and NA 11490, are also in this size class. A portion of N:16:45 and NA 11439 are included in the sample of sites chosen for study from Group 4, discussed below.

2. Type 18, Probable Habitation. All four probable residential (pit house) sites were included in the study sample.

The other site categories are abundant enough to warrant selection of a sample for analysis:

3. Type 1/11, Residential/Temporary Residence (<10 rooms). The combined site type -- 1/11, Residential/Temporary Residence -- was divided into three size categories for the purposes of sampling. Site size may be a significant factor in the level of interest shown by pothunters. In particular, small sites may be ignored, because they are more difficult to locate and are less productive than larger sites. Residential sites with more than 100 rooms have already been considered (Group 1, above). Among sites with between 1 and 100 rooms, the majority has fewer than 10 rooms (N=139), and a minority has between 10 and 100 rooms (N=40). In other words, the distribution of site size is skewed to the left. In order to assure a representative sample of sites of different sizes, two size classes were identified on the basis of these distributional data. From the class of sites with fewer than 10 rooms, a sample of 18 sites (13 percent) was selected for recording.

4. Type 1, Residential (10-100 rooms). From the class of sites with between 10 and 100 rooms, a sample of 12 sites (30 percent) was chosen for analysis. A higher sampling rate was applied to these sites than to sites with fewer than 10 rooms in order to increase the size of the sample.

5. Type 2, Resource Procurement. There are 11 recorded resource-procurement sites in the study area. A sample of four sites (36 percent) was selected at random. None of the resource-procurement sites were listed in the RFP as having rooms, suggesting that all were artifact scatters. It was anticipated that few of these sites would have been pot hunted. On the other hand, artifacts might have been collected from the surface of these sites.

6. Type 7, Defensive. The RFP listed six defensive sites in the study area. Four of these sites (67 percent)

were chosen at random for inclusion in the study sample. At the suggestion of Scott Wood, one of the chosen sites, AR-03-12-01-36, was replaced by a seventh defensive site that was not listed in the RFP -- Site F(PMSVS). According to Wood, there is reason to doubt that AR-03-12-01-36 is a defensive site.

7. Type 8, Communication. There are 15 communication (rock art) sites listed in the RFP. Four of these (27 percent) were selected at random to be studied. Four additional sites with rock art were selected for analysis under other site categories (Table 1). Two of these, Squaw Creek Ruin and ARIZ N:16:26(PC), were not listed as rock art sites in the RFP.

The Preliminary Research Design (SWCA 1990) stated that the scheme for sampling sites would include two levels of stratification: by site type *and* by location on the mesa. Location was to be included as a proxy for accessibility. It was proposed that three areas be distinguished: northeastern Perry Mesa, southwestern Perry Mesa, and the area on or below the western escarpment of Perry Mesa, including the low reaches of canyons cut into the escarpment.

In the Final Research Design (Ahlstrom et al. 1990), strata based on site location were eliminated from the sampling scheme for several reasons. Most importantly, a reconnaissance of Perry Mesa, combined with a review of available site data, indicated that there was no satisfactory way to distinguish ease of access on the basis of lines drawn on a map. Also, roads on Perry Mesa go directly to some of the major sites, indicating that the locations of roads and of sites are not independent variables. The decision to eliminate site location from the sampling strategy was made in consultation with the Tonto Forest Archeologist. Although access was not part of the sampling design, it was nevertheless considered a potentially significant variable affecting the vulnerability of sites on Perry Mesa to vandalism (Chapter 5).

In hindsight, it appears that we could have managed with a smaller sample of large sites, but that we should have examined a larger number of small sites. This sample of small sites should have been stratified by distance from the cliffs that form the west and south edge of Perry Mesa (Chapter 5).

Site Vulnerability Factors

One goal of the Site Vandalism Study is to identify factors that are responsible for making some archaeological sites on Perry Mesa more vulnerable to damage by vandals than others. The Final Research Design (Ahlstrom et al. 1990) identified a number of

variables that might affect the vulnerability of sites on the mesa. One group of variables was suggested by an empirical analysis of vandalism in southwestern Colorado by Nickens et al. (1981) and by a programmatic statement by Christensen et al. (1988). These included:

1. site size;
2. site density;
3. site visibility, which can be affected by site setting, local topography, height of rubble mounds, and type and distribution of vegetation;
4. site type: in the Perry Mesa case, relevant variables might include the presence or absence of surface ceramics, the presence or absence of rubble scatters and mounds, site size (depending on area of artifact scatter and extent of rubble scatters or mounds), height of rubble mounds, and the presence or absence of recognizable trash areas; and
5. site accessibility, including distance to roads and, possibly, quality of roads.

Other variables were suggested by available information concerning vandalism on Perry Mesa:

6. location of a site within the study area, e.g., whether in the northern or southern portion of the mesa;
7. amount of vandalism at a site, in the sense that individuals may be drawn to locations that have evidence of prior digging;
8. site dispersal: given the presence of site clusters in the study area, dispersal of sites may have an effect on vulnerability; this variable, though related to site density (2), is different from it;
9. location within the site: distinctive site areas include rubble scatters or mounds, trash areas, and open areas (such as plazas or spaces between room blocks);
10. visibility from off-site: that is, areas hidden from main access routes may be more vulnerable to digging than clearly visible areas; and
11. "richness" of the site: that is, whether the site has characteristics that would suggest it is a rich source of pots and other artifactual "goodies."

These variables had an important bearing on the design of field methods, in that an attempt was made to collect data relating to each of them.

Repeat Photography

A study of the history of site vandalism on Perry Mesa would require, or at least be facilitated by, observations of site condition at more than one time. The research to be undertaken by the Perry Mesa Site Vandalism Study would provide one such observation -- for the sampled sites. In principle, a second, earlier set of observations was collected when the 200+ inventoried sites on Perry Mesa were recorded. The quality of this information is, however, variable, in particular with respect to evidence of vandalism. On the other hand, photographs of the sites taken when they were recorded can provide an objective, though incomplete, record of site condition. Matching of these original site photographs could provide an observation of site condition at a second point in time and provide a baseline for future photographic monitoring of site condition. This technique of producing sequences of matched photographs is known as "repeat photography" (Rogers et al. 1984). The research design specified that an effort would be made to locate such photographs and determine their usefulness for diachronic study of vandalism in the Perry Mesa locality. The success of this approach would depend on the availability of relevant photographs and on our ability to relocate photo points and views in the field.

Site-Recording Procedure

A recording procedure was devised to collect data relevant to the research questions and concerns outlined above. This procedure was summarized as a list of tasks to be completed at each site included in our sample (Appendix A: Site-Recording Procedure). The first step was to relocate the site "in a reasonable amount of time"; experience gained on Perry Mesa suggested that a half hour (two person/hours for a crew of four) was reasonable. Recording of a site, once it had been found, included three primary kinds of data collection: completion of forms, mapping, and photography.

Completion of Forms

Three forms were developed for the study: the Site Vandalism Record, Narrative Vandalism Record, and Specimen Record (Appendix A). The Site Vandalism Record form includes spaces for briefly describing a site and its setting, summarizing the evidence that it has been vandalized, and indicating whether previous records of site condition are available. A classification of damage due to vandalism was borrowed from the research of Wylie, Nagel and Kvamme in southeastern Utah (Wylie and Nagel 1989; Kvamme 1990; Ken Kvamme, personal communication 1990). It includes

four categories based on the amount of a site that has been dug: excellent (0 percent), good (<25 percent), fair (25-50 percent), and poor (>50 percent) (Chapter 5: The Dependent Variable -- Site Condition).

The Narrative Vandalism Record form is open-ended and is designed for describing evidence of vandalism with reference to convenient units, whether an entire site, a midden, a room block, a room, a particular pothunter hole, or whatever. A "memory guide" listing some desirable observations is appended to the bottom of the Site Vandalism Record form. Considerable time was spent recording variables that appeared useful for dating periods of vandalism, in particular evidence relating to the characteristics of holes and associated backdirt and to the revegetation of the holes and backdirt. In some cases, different styles of digging could be identified. Artifacts -- i.e., trash -- left at sites by vandals and, presumably, other visitors was noted. It became apparent early in the fieldwork that beverage cans would provide the best artifactual evidence for dating episodes of vandalism. Evidence of past measures taken to protect sites -- essentially the placing of signs -- was also recorded.

The Specimen Record Form is for making observations on surface artifacts at a site. The RFP specified that no artifacts were to be collected by the project, and, therefore, analysis had to be conducted in the field. The Final Research Design had specified that

On sites with small numbers of surface pot sherds (less than 100), 75 percent or more of all ceramics will be subject to field analysis. On sites with greater numbers of ceramics, a sampling strategy will be employed. This will consist of laying out one or more baselines and analyzing all sherds within a set distance from each baseline. Sampling percentages will be chosen on a site-by-site basis to assure an adequate sample of ceramic variability. Sherds will be categorized in accord with Wood's (1987) *Checklist of Pottery Types for the Tonto National Forest*. Reports on work conducted on Perry Mesa by the Museum of Northern Arizona (Fiero et al. 1980) and the Central Arizona Ecotone Project (Gumerman et al. 1976) provide lists of pottery types that are likely to be encountered [Ahlstrom et al. 1990].

It became clear during the field recording of the first site that this procedure was impractical and unproductive, given the time frame of the project. The decorated pottery that is useful for dating sites is extremely rare and, therefore, would occur infrequently in sample units of the kind described. Typologies of local plain wares, such as that presented by Wood (1987), rely

primarily on various combinations of temper materials and secondarily on surface finish to differentiate pottery types and varieties. It is doubtful whether accurate counts of these typological divisions could be produced on the basis of observation in the field. Even if they could, the time required to produce and examine fresh breaks on sherds would be prohibitive, especially considering that these analyses would contribute little to a study of site vandalism.

For these reasons, the detailed recording of sherds in one or more sample units was discontinued. Instead, decorated sherds were noted and, often, drawn as they were encountered on a site, and general observations on the ceramic assemblage were recorded. These procedural changes were made in consultation with the Tonto Forest Archeologist. Also, the number of surface artifacts of different kinds (ceramics, lithics, ground stone) was estimated, and the presence and condition of human bone was recorded.

Mapping

As specified in the Final Research Design, larger sites were mapped with plane table and alidade, and smaller sites with compass, tapes, and in a few cases pacing of distances. To maintain consistency and for ease of later measurement and drafting, all maps were drawn at a scale of 2 meters to the inch, 5 meters to the inch, or 10 meters to the inch, depending upon the size and complexity of the site being recorded. Mapping focused on the documentation of architectural features and middens -- that is, on areas of interest to s -- rather than on the discovery of site boundaries

On small sites and the rare large sites with minimal damage, all recognizable pothunter holes were recorded on the site map. This procedure was not followed on large, badly vandalized sites; instead, an effort was made to identify and map all recent pot-holes, that is, all those dug in the last several years. There are three reasons for this change in procedure. First, the damage on these sites tends to be so extensive that it would be difficult to depict on a map. Detailed contouring across a site, including within rooms, would be required to produce an accurate map of holes, depressions, backdirt piles, churned areas, and rubble piles. There was insufficient time to produce maps of this kind at the number of sites included in our sample. Second, it was felt that photographs would provide a better record of site condition than a map that was not based on detailed contouring. The third reason relates to one of the project's research goals -- to understand the history of vandalism on Perry Mesa. As discussed below, episodes of vandalism become more and more difficult to distin-

guish and to date as their age increases. The best identified and dated events occurred in the recent past, probably within the last five years. The mapping strategy for large sites focused on this more clear-cut evidence.

On many sites, walls were mapped at three levels of reliability. The best evidence related to standing walls that had been exposed, in most cases, by pothunters. The presence of a wall mapped in this way can be taken as evidence that a pothunter hole is located next to the wall. Other wall alignments could be identified with considerable confidence on the basis of linear rubble piles and adjacent depressions corresponding to the interiors of rooms. Finally, the former presence of some walls could be guessed on the basis, for example, of truncated wall segments.

Site maps were drawn with three goals in mind: first, to record site damage, in the manner just discussed; second, to show the location of photo stations so that they can be relocated in the future; and third, to provide data on site architecture, specifically on the layout of rooms and room blocks.

Photography

Photographs were taken in black-and-white and color slide formats to document site condition. The number of photos of a site increased as a function of site size and, secondarily, of the amount of damage by vandals. Photo stations were recorded on site maps, so that these data can serve as the basis for future monitoring of site condition. In most cases, two or more photos were taken in different directions from each station, both to make the sample of images of each site more systematic and to increase the amount of information available to anyone attempting to relocate a station in the future. When possible, old photographs of sites obtained from the Museum of Northern Arizona were repeated. The stations from which these photos were taken were also recorded on the site map. In some cases, additional photos were taken from these repeat stations.

The Photographic Data Sheet used by the project follows a standard format for recording archeological photographs (Appendix A); in addition, it includes spaces for recording photo stations and for identifying old photographs that are being repeated.

Rock-Art Sites

The weakest aspect of the site recording procedure outlined in the Final Research Design proved to be the method for handling rock-art sites. The research

design simply stated that "other forms of damage including, but not limited to, defacement of rock art panels will be noted." This lack of interest in rock art was the result of an assumption -- unrecognized on our part and unstated in the RFP -- that illegal digging constituted the most important form of vandalism on Perry Mesa. (The assumption is, in fact, valid.) In addition, when the research design was being written, we did not know how rock art was treated in the existing site records that formed the backdrop for our research.

Ideally, observations on the condition of rock art should be made with reference to a map showing the location of panels and to photographs and drawings of those panels. This level of data does not, to our knowledge, exist for any rock-art site on Perry Mesa. Furthermore, the Perry Mesa Site Vandalism Study was not prepared to record sites in this manner, nor was there sufficient time to do so. Therefore, a nonintensive procedure for recording vandalism at rock art sites was instituted. This involved walking the ledges and slopes below where rock-art panels were thought to occur and examining panels for damage, including defacement and graffiti. In a few cases, it was possible to relocate a panel that had been photographed previously and, therefore, to compare the panel's present and past condition. Panels that appeared to have been damaged were photographed. All such cases were at Type 1 sites (≥ 10 rooms), and the approximate location of the damage was either noted or indicated on the site map.

RESULTS

The primary archeological data collected by the Perry Mesa Site Vandalism Study are the individual site records summarized in Appendix C. The analyses and interpretations presented in the chapters that follow are based on these data and on the more limited range of information available on all the inventoried sites on Perry Mesa. Table 1 lists the 61 sites that were included, at one level or another, in the fieldwork phase of the project. The table identifies 46 sites that were in our sample and that were recorded. There are in fact only 45 *different* sites in this category: ARIZ N:16:28(PC) was selected under two site types -- No. 7, defensive, and No. 8, communication. An additional five sites selected under Type 1/11, residential/temporary residence (< 10 rooms) could not be relocated. The table also includes 11 sites that were visited in the course of fieldwork and that were recorded in more cursory fashion. Many of the 56 sites where data were collected represent two or more site types. If sites are counted once for each type, then a total of 65 sites was recorded by the project.

Fourteen rolls (almost 500 exposures) of both black-and-white and color film were used in recording the sites. Prior to the commencement of fieldwork, the photographic collection of the Museum of Northern Arizona (MNA) was searched for photographs of sites recorded by that institution. Additional photos of Perry Mesa sites were borrowed from Peter Pilles, who recorded sites on the mesa in the late 1960s (Chapter 1). These two sources provided photos of 14 sites with "NA" or "AR" numbers that were included in our sample *at the time* the photos were obtained.

As discussed elsewhere, the sample of recorded sites changed slightly after fieldwork had commenced, and it was not possible to return to MNA to look for photos of new sites added to the sample. During fieldwork, one or more photos were repeated at eight of the sites. An effort was also made to obtain copies of photographs of sites recorded by the Central Arizona Ecotone Project (CAEP). Unfortunately, some records from this project were apparently lost when the sponsoring institution, Prescott College, declared bankruptcy. The records that were saved are stored at the Center for Archaeological Investigations, Southern Illinois University. The Center has been unable to locate any survey photos from sites recorded on Perry Mesa by the CAEP.

A database was compiled in dBASE III that includes information on 198 sites. The data were collected by the Perry Mesa Site Vandalism Study or come from existing site records. The variables in the database are listed and described in Appendix B. The database incorporates only those sites located within the study area (as defined earlier) and excludes Type 4, agricultural, sites. For purposes of GIS analysis, a digital terrain model of Perry Mesa was produced using data on USGS topographic maps. The model included site locations, which were linked to the database to facilitate the updating of maps and so that maps incorporating different database attributes, such as site type and size, could be produced. This terrain model was employed in two ways: to make a wire-frame, 3-D terrain model of the mesa, which was useful for exploratory analysis of site patterning, and to develop a digital slope map of the mesa (discussed in Chapter 5: "Down-the-Line" Travel Time). We had also intended to use the terrain model for visual analysis, which determines a site's visibility on the basis of terrain and the masking effect of vegetation. This analysis was not done because (1) the flatness of the mesa limits the effect of terrain on visibility, (2) adequate vegetation data were unavailable, (3) a simpler but nevertheless adequate measure of visibility was available, and (4) the larger sites on the mesa were probably so well known to pothunters as to call into

question the importance of visibility in determining the vulnerability of these sites to damage.

Evidence of Vandalism

The recording of sites focussed on evidence of vandalism. Aspects of vandalism damage that are useful for dating are discussed in Chapter 6. A topic not covered there is variation in styles of digging. In many portions of the larger mounds, pothunters have "blown through" the walls of rooms, making it difficult to delineate room outlines on the basis of surface evidence. In other cases, they have followed one or more walls of a room. Occasionally, a hole has been punched through the lower portion of a wall, presumably at or just above floor level. In one instance (Pueblo Pato, Mound B), a pothunter has tunneled through the corner of a room, apparently to gain access to the corners of the three adjacent rooms. This would suggest an expectation of finding pots or other desired materials at or below floor level in the corners of rooms. According to one former pothunter, "most only dug the walls of rooms and along the floors" (Chapter 3).

A subset of the rooms that are dug along the walls provide evidence of a specific style of digging that can probably be credited to a single individual or a small group of pothunters. This style is characterized by systematic digging around the four walls of a room and by the presence of a linear pile of backdirt in the center of the room, running down the room's long axis. Typically, this pile butts against the wall at one end of the room. Whether the central pile covers undisturbed deposits -- as the previous quote would suggest -- is unknown. This pattern of digging occurs in a number of rooms in Mound B at Squaw Creek Ruin and in one room each of Mound B of Pueblo Pato and of Area B at ARIZ N:16:45A(PC). This evidence points to an aspect of pothunter behavior that is generally impossible to document -- the digging of multiple sites, presumably over a number of years, by particular pothunters. The effects of the various kinds of digging

on the research potential of the Perry Mesa sites will be addressed in Chapter 7.

"Shovel damage" is not the only indication of pothunter activity at sites on Perry Mesa. Many sites, particularly the larger ones, possess one or more recent rock-lined hearths. No patterning in the distribution of hearths at sites was recognized -- for example, they do not tend to be on the less visible side of a mound. In addition, all of the larger sites have a sparse scatter of recent trash, though in fact there was less trash than expected. The implications of steel and aluminum beverage cans for the dating of pot hunting are discussed in Chapter 6. It should be noted that evidence of camping relates directly to visitation to sites and only indirectly to pot hunting.

In several instances, tools that relate directly to digging were present on a site. The handle of an entrenching tool was seen at NA 11687, and a metal strainer, possibly used to search for beads, was found in a recent trash deposit at Pueblo La Plata. Two screens had been left on the mound at ARIZ N:16:80(PC), and a shovel was found hidden in a crevice on the nearby cliff. Finally, a small, hand-drawn sled, made of a bent piece of corrugated steel and presumably used to transport supplies, was found at ARIZ N:16:45A(PC).

Rock-Art Sites

No cases of damage to prehistoric petroglyphs were observed at the Perry Mesa sites. In two or three cases, a recent rock-art motif was noted. These included a vertical arrow on the cliff below Mound A at Squaw Creek Ruin, a stick figure on the cliff below Mound C at Pueblo Pato, and a set of initials (?) located next to a rectilinear figure -- that looks like the ground plan of a small pueblo and may or may not be prehistoric -- at ARIZ N:16:80(PC). Clearly, vandalism of archeological sites on Perry Mesa fits the category of pot hunting but not that of defacement of rock art.

CHAPTER 5

UNDERSTANDING SITE VULNERABILITY TO VANDALISM

Not all sites in the American Southwest have been vandalized, and, among those that have been vandalized, the extent of damage varies. It follows, first, that some sites have been more vulnerable to vandalism than others, and second, that by understanding what has made these sites vulnerable to damage, we can hope to improve techniques for protecting sites in the future.

A primary goal of the Perry Mesa Site Vandalism Study is to assess factors that contribute to the vulnerability of cultural resources on the mesa to vandalism. As discussed earlier, studies in the Four Corners region suggest that significant factors, or variables, might include a site's type, its accessibility, and its setting. This study employs two approaches to understanding how these and other factors contribute to the vulnerability of archeological sites to vandalism. The first is an attempt to develop a formal model of vulnerability; the second is a more general discussion of factors influencing vulnerability.

MODELING SITE VULNERABILITY

Ideally, a model of site vulnerability would provide the means to estimate the probability that a given site was vandalized in the past or that it will be vandalized in the future. The model would consist of a set of variables and a procedure, preferably mathematical, for manipulating those variables. Mathematical precision is difficult to achieve in archeological analysis. For that reason, a more realistic expectation might be that the model would identify important variables and provide quasi-probabilistic estimates of site vulnerability.

This section discusses our efforts to develop a model of site vulnerability for Perry Mesa. The term "model" can be understood in two senses, one descriptive and the other explanatory. A basic distinction between the two kinds of model is that an explanatory model has been verified, or tested, with a data set other than the one on the basis of which it was developed. This step of verification is the justification for applying the model to new cases, that is, for using it to "explain" new data. A descriptive model has not been verified in this way. In these terms, our effort to produce a model of site vulnerability for Perry Mesa has been basically descriptive. In other words, all of the available data have been used to develop the model; it has not been verified.

Although our descriptive model of site vulnerability has not been verified, it has been tested in another way. At several points in the research, our "model" of vulnerability has been tested against an improved understanding of Perry Mesa archeology, and it has

then been revised accordingly. The model has been developed in several steps. Our revised proposal to Tonto National Forest (SWCA 1990) suggested that a number of variables might play a role in determining the vulnerability of sites on Perry Mesa to vandalism. These included site density, dispersal, visibility, type, accessibility, location on the mesa, and "richness," as well as the amount of previous vandalism at a site. Our final research design (Ahlstrom et al. 1990) went a step further, in the sense that it included a prediction, or hypothesis, of how some of these variables interacted to affect the vulnerability of sites to vandalism:

Preliminary research suggests that the variables of size and accessibility interact to affect the vulnerability of sites on Perry Mesa to vandalism. Clearly, the largest sites on the mesa have been known to pothunters and exploited by them for years. Ease or difficulty of access has probably had little effect on the attractiveness of these sites to pothunters. Instead, their appeal determined the quality of access, in the sense that a number of the roads on Perry Mesa appear to have been directed to the major sites. At the other extreme, the smallest sites, those with only a couple rooms, seem to have suffered little damage. Access is not important in these cases either, because the sites are inherently uninteresting to pothunters. This contrast in vulnerability between the largest and the smallest sites suggests the possibility of a middle ground involving sites that are large enough to be worth digging, but only if they are sufficiently accessible.

This beginning of a model was developed on the basis of knowledge gained through literature review and a day-long visit to the mesa.

Predictions

The initial model was further refined on the basis of impressions gained during the fieldwork phase of the project and while the project database was being organized. At this stage, the goal of the analysis could be stated as follows: to predict the (dependent) variable, site condition, on the basis of several (independent) variables: site type, size (actually mound size), visibility, distance from the cliffs that form the western boundary of Perry Mesa, travel time from the nearest large site, distance from the nearest road, and travel time from the primary access point at the north end of the mesa. [These variables will be discussed in detail shortly.]

Our predictions as to how these variables would behave were as follows:

1. There is a low probability of vandalism at three types of site: Type 2, resource procurement; Type 8, communication (rock art); Type 18, probable habitation.

2. The condition of sites of other types cannot be predicted on the basis of site type alone.

3. In the case of Type 1, residential, and Type 1/11, residential/temporary residential, sites, if a site is large, there is a high probability that it has been vandalized.

4. On the other hand, if the site is small, condition cannot be predicted on the basis of size alone. The cutoff, in this context, between large and small sites remains to be determined.

5. For small sites of these types, the probability that a site has been vandalized is higher (1) if it is near the cliff than if it is far from the cliff and (2) if it is near a large site than if it is far from any large sites. The probability that a site has been vandalized may be higher (3) if it is easily visible than if it is hard to see, (4) if it is near a road than if it is far from a road, and (5) if it is near the access point to the mesa than if it is far from that point. The relative importance and possible interaction of these variables remains to be determined.

6. For sites of Type 7, defensive, if a site also fits the category of a large site of types 1/11, then inferences concerning that category apply to the site -- that is, there is a high probability that the site has been vandalized.

7. For sites of Type 7 that do not also fit the category of a large site of Type 1, condition may be difficult to predict on the basis of the model.

To some extent, these predictions reflected a fairly complete understanding of the data collected on Perry Mesa. For example, only four probable habitation sites (Type 18) were investigated; given this small number of sites, impressions gained in the field would probably be close to conclusions reached on the basis of a thorough analysis of site data. In other ways, it would be valid to consider the analysis a test of impressions, or predictions, recorded at this stage. For example, data were collected from 44 sites with domestic architecture built of masonry (Types 1 and 1/11, residential and residential/temporary residence); given this number of sites, and their variability, predictions as to the role of different variables in determining vulnerability might or might not survive careful analysis of the data.

Independent Variables

The following discussion of the independent variables deals, first, with the reasons for including a variable in the analysis, second, with the procedure used to "measure" that variable, and third, with the use of the variable in an initial, descriptive phase of analysis. This analysis characterizes the sample of recorded sites on Perry Mesa in terms of the independent variables, taken both one at a time and in pairs (Tables 2-10). These characterizations apply in varying degree to the entire population of sites on the mesa. This procedure for discussing the variables compresses two phases of the analysis, in the sense that the variables were defined at the same time as the predictions given above were being developed, whereas the initial, descriptive analysis was done after the predictions were made.

Table 2. Distribution of Sites by Primary Site Type.

Site Type 1*	Number	Percent	Cumulative Frequency	Cumulative Percent
1	41	20.7	41	20.7
2	13	6.6	54	27.3
7	2	1.0	56	28.3
8	5	2.5	61	30.8
1/11	133	67.2	194	98.0
18	4	2.0	198	100.0

- * 1, residential (≥ 10 rooms)
- 2, resource procurement
- 7, defensive
- 8, communication (rock art)
- 1/11, residential/temporary residence (1-9 rooms)
- 18, probable habitation (pit house)

Site Type

From the outset, it was apparent that a site's morphology, that is, its type, would have an effect on its vulnerability to looting. As discussed earlier, a number of sites on Perry Mesa are classified to two or more site types. This complicates the tabulation and analysis of sites by type. One approach to this problem has been to draw a distinction between a site's "primary" and "secondary" type assignments (Tables 2 and 3). In identifying a site's primary type, habitation and resource-procurement categories (Types 1, residential; 1/11, residential/temporary residence; 2, resource procurement; and 18, probable habitation) take precedence over other categories (Types 7, defensive; and 8, communication).

Table 3. Distribution of Sites by Secondary Site Type.

Site Type 2*	Number	Percent	Cumulative Frequency	Cumulative Percent
1	35	17.7	35	17.7
2	11	5.6	46	23.2
4	18	9.1	64	32.3
7	4	2.0	68	34.3
8	14	7.1	82	41.4
1/11	112	56.6	194	98.0
18	4	2.0	198	100.0

* see Table 2

The primary type of 67 percent of the recorded sites on Perry Mesa is 1/11, residential/temporary residence. That is, the majority of sites have fewer than 10 rooms. An additional 21 percent of sites are of Type 1 and have 10 or more rooms. Most if not all of the sites of these two types (combined total = 88 percent) probably relate to the Perry Mesa Tradition. That leaves the 12 percent of sites assigned to the other types as *possibly* dating before or after the Perry Mesa Tradition.

The recording of sites on Perry Mesa has, to some extent, been biased toward the larger pueblos. It is, therefore, safe to conclude that well under 21 percent of the sites on the mesa have 10 or more rooms, and that the percentages of the other, less visible site types are higher than the data in Tables 2 and 3 would indicate.

A consideration of primary *and* secondary site type data shows that, whereas 14 sites are recorded as having rock art (Type 8, communication), only five of those sites are not also residential or resource-procurement sites (Types 1, 1/11, 2, 18). Similarly, four sites are defensive (Type 7), but two sites are defensive only.

Size Class

One would expect large sites to be more attractive to pothunters than small sites, at least when surface evidence of masonry architecture is present: "a variety of sites were known to most people, however, the big pueblos were the ones that were most vandalized because everyone knew they were loaded with quality artifacts" (Chapter 3). In particular, very small sites often yield restricted inventories of whole artifacts -- presumably because they were used for a short time, by a small number of people, or for a restricted range of activities. For analytic purposes, sites were divided

into size classes: Class 0 has no surface rooms, Class 1 has an estimated 1 to 9 ground-floor rooms, Class 2 has 10 to 19 rooms, and so forth. Size class data are summarized in Table 4. Class 0 includes all sites except those of Types 1 and 1/11. Class 1 includes all sites of Type 1/11, which have between 1 and 10 rooms; these data are equivalent to those given for Type 1/11 in Table 2. As noted before, the majority of sites fall in this type and size class. The remainder of the table shows the size distribution of Type 1 sites, those with more than 10 rooms. The number of sites per size class drops abruptly at about 10 rooms, falls further at about 20 rooms, and fluctuates between 20 and 100+ rooms. There appears to be a break in the distribution between 70 and 90 rooms, but this is probably misleading, given that the category of 100+ rooms includes three sites ranging in size from slightly more than 100 rooms to several hundred rooms. Because of the aforementioned bias toward the recording of large sites, the data in Table 4 are not representative of the population of sites on Perry Mesa.

Visibility

The vulnerability of a site to looting is partly a function of the pothunters' ability to find it. A site's likelihood of being located is, in turn, partly a function of its visibility. Sites with fewer than 20 rooms, including sites with no surface evidence of architecture, were assigned to Visibility Class 0, whereas sites with 20 or more rooms were assigned to Visibility Class 1. The distinction here is between sites that can be readily seen from distances of 50 m or more and those that are difficult to recognize from this distance. This variable was defined late in the analysis. As a result, it is based on general impressions rather than careful observation. Furthermore, it reflects an awareness of data presented later showing a cutoff at 20 rooms between lesser and greater probabilities of vandalism. Data on the distribution of sites by Visibility Class can be found in Table 4: Visibility Class 0 includes sites of Size Classes 0 through 2, whereas Visibility Class 1 includes those of Size Class 3 and above.

Distance from Cliff

The inventory of recorded sites on Perry Mesa shows clearly that the cliffs and canyons along the western front of the mesa were a focus of prehistoric settlement. For this very reason, it seemed likely that the cliffs would be a focus of activity on the part of pothunters. In other words, location near the cliffs would increase the likelihood of a site being found by vandals. Distance from cliff was measured in 200 m increments. One-half of the recorded sites on Perry

Table 4. Distribution of Sites by Size Class.

Size Class*	Number	Percent	Cumulative Frequency	Cumulative Percent
0	23	11.6	23	11.6
1	133	67.2	156	78.8
2	20	10.1	176	88.9
3	2	1.0	178	89.9
4	6	3.0	184	92.9
5	3	1.5	187	94.4
6	4	2.0	191	96.5
7	3	1.5	194	98.0
10	1	0.5	195	98.5
11	3	1.5	198	100.0

* 0 = 0 rooms; 1 = 1-9 rooms; 2 = 11-19 rooms; ...
11 = 100+ rooms

Table 5. Distribution of Sites by Distance from Cliff (in meters).

Distance from Cliff	Number	Percent	Cumulative Frequency	Cumulative Percent
0-200	8	49.4	88	49.4
200-400	6	20.2	124	69.7
400-600	3	7.3	137	77.0
600-800	3	7.3	150	84.3
800-1000	2	6.7	162	91.0
1000-1200	6	3.4	168	94.4
1200-1400	3	1.7	171	96.1
1400-1600	2	1.1	173	97.2
1600-1800	3	1.7	176	98.9
>2000	2	1.1	178	100.0

Table 6. Distribution of Sites by Distance from Road (in meters).

Distance from Road	Number	Percent	Cumulative Frequency	Cumulative Percent
0-200	93	47.0	93	47.0
200-400	39	19.7	132	66.7
400-600	23	11.6	155	78.3
600-800	14	7.1	169	85.4
800-1000	9	4.5	178	89.9
1000-1200	6	3.0	184	92.9
1200-1400	3	1.5	187	94.4
1400-1600	3	1.5	190	96.0
1600-1800	5	2.5	195	98.5
1800-2000	2	1.0	197	99.5
>2000	1	0.5	198	100.0

Mesa are located within 200 m of the cliffs that form the mesa's western boundary and that border the east-west canyons that cut into the mesa; three-quarters of the sites are within 600 m of these cliffs (Table 5). This distribution is probably a function both of the relative abundance of sites near the cliffs and of the lack of systematic survey in the central portion of the mesa. It should be noted that the table does not include 20 sites located in the hilly country at the eastern edge of Perry Mesa. These sites were eliminated for two reasons. First, the cliffs and the hills served as separate foci for prehistoric settlement, and the distance of a site in the hills from the nearest cliff is probably of little importance. Second, these two land forms appear to attract pot hunting activity in different ways.

Distance from Road

Previous studies of vandalism have suggested that ease of access has a significant impact on the vulnerability of sites to vandalism. Approximately one-half of the recorded sites on Perry Mesa are within 200 m of a road, and about three-quarters are within 600 m (Table 6). The proximity of most sites to a road results from a combination of factors, including the building of roads to locations with high site densities, a sometime bias on the part of archeologists toward recording sites near the road, and the abundance of roads on Perry Mesa -- much of the mesa overall being within 600 m of a road.

Site Type and Distance from Cliff

Table 7 is a cross-tabulation of the two variables, primary site type and distance from cliff. Recall that most sites are within 600 meters of a cliff (Table 5). Table 7 shows that all Type 1 sites, which have from 10 rooms to several hundred rooms, fit this pattern; in fact, these sites are all within 400 meters of a cliff (this tabulation does not include sites on the eastern side of Perry Mesa that are far from the nearest cliff). The sites that are more than 600 meters from a cliff are primarily of Types 2, resource procurement, and 1/11, residential/temporary residence. The latter category includes small sites that are often called "field houses" by archeologists. The cross-tabulation suggests that resource-procurement and residential/temporary residence sites involved activities that were, in some cases, carried out in the more central portions of the mesa.

Site Size and Distance from Cliff

Table 8, a cross-tabulation of site size by distance from cliff, shows essentially the same patterns as

Table 7. That is, all sites beyond 600 meters from a cliff are of Size Class 0 (including sites of Type 2, resource procurement) or Size Class 1 (sites of Type 1/11, residential/temporary residence). Size Classes 2 and above pertain entirely to Type 1, residential, sites. The table indicates that there is no clearcut pattern *within* this type relating to a site's distance from the nearest cliff, though there is some evidence that sites with more than 60 rooms are more likely to be located within 200 m of the cliff than are smaller sites.

Site Type and Distance from Road

Table 9 is a cross-tabulation of primary site type by distance from road. As noted above, most recorded sites on Perry Mesa are within 600 m of a road. The cross-tabulation shows that sites beyond that distance come primarily from the two most abundant categories, Type 1, residential, and Type 1/11, residential/temporary residence.

Site Size and Distance from Road

Table 10 is a cross-tabulation of site size by distance from road. It shows essentially the same patterns of site distribution as Table 9. Size Classes 2 through 11 provide a breakdown of Type 1, residential, sites by size. As mentioned previously, close to half the recorded sites on the mesa are within 200 m of a road. It is worth noting that *all three* sites in Size Class 11 (100+ rooms) are within 200 m of a road. The three sites are Pueblo Pato, Pueblo La Plata, and Squaw Creek Ruin. It appears in all three cases that roads, or at least the farthest portions of roads, were built to these sites.

"Down the Line" Travel Time

Distance of a site from the nearest road is only one aspect of site access. The distribution of roads on Perry Mesa suggested a second approach to measuring accessibility. Clearly, the majority of vehicular traffic on Perry Mesa arrives there by way of Interstate highway 10 and the Bloody Basin Road. Site access can, therefore, be measured in terms of travel time to a site from the spot where the Bloody Basin Road climbs onto Perry Mesa. Travel time was defined as a variable in preference to distance, so that variability in the quality of roads on the mesa could be taken into account. Four levels of road quality were defined; these levels, along with the speed of travel inferred for each, are (1) Bloody Basin Road, 30 mph, (2) dirt roads, 15 mph, (3) jeep trails, 7 mph, and (4) off road, 2 mph. Speed of travel was determined on the basis of experience gained in the field. Stretches of road were assigned to categories on the basis of this same

Table 7. Primary Site Type by Distance from Cliff (in meters).

Site Type 1*	Distance from Cliff				
	0-200	200-400	400-600	600-800	800-1000
1	20	8	0	0	0
2	4	3	1	2	2
7	1	0	0	0	0
8	2	1	1	0	0
1/11	58	24	11	11	10
18	3	0	0	0	0
Total	88	36	13	13	12

Site Type 1*	Distance from Cliff					Total
	1000-1200	1200-1400	1400-1600	1600-1800	>2000	
1	0	0	0	0	0	28
2	0	1	0	0	0	13
7	0	0	0	0	0	1
8	0	0	0	0	0	4
1/11	5	2	2	3	2	128
18	1	0	0	0	0	4
Total	6	3	2	3	2	178

* see Table 2

Table 8. Site Size Class by Distance from Cliff (in meters).

Size Class *	Distance from Cliff				
	0-200	200-400	400-600	600-800	800-1000
0	9	4	2	2	2
1	58	24	11	11	10
2	10	5	0	0	0
3	0	0	0	0	0
4	2	2	0	0	0
5	2	0	0	0	0
6	1	1	0	0	0
7	2	0	0	0	0
10	1	0	0	0	0
11	3	0	0	0	0
Total	88	36	13	13	12

Size Class	Distance from Cliff					Total
	1000-1200	1200-1400	1400-1600	1600-1800	>2000	
0	1	1	0	0	0	21
1	5	2	2	3	2	128
2	0	0	0	0	0	15
3	0	0	0	0	0	0
4	0	0	0	0	0	4
5	0	0	0	0	0	2
6	0	0	0	0	0	2
7	0	0	0	0	0	2
10	0	0	0	0	0	1
11	0	0	0	0	0	3
Total	6	3	2	3	2	178

* see Table 4

Table 9. Primary Site Type by Distance from Road (in meters).

Site Type 1*	Distance from Road					
	0-200	200-400	400-600	600-800	800-1000	1000-1200
1	23	4	5	1	1	2
2	6	4	2	1	0	0
7	0	1	0	0	1	0
8	2	1	0	1	1	0
1/11	59	28	16	11	6	4
18	<u>3</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	93	39	23	14	9	6

Site Type 1*	Distance from Road					Total
	1200-1400	1400-1600	1600-1800	1800-2000	>2000	
1	1	2	2	0	0	41
2	0	0	0	0	0	13
7	0	0	0	0	0	2
8	0	0	0	0	0	5
1/11	2	1	3	2	1	133
18	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>4</u>
Total	3	3	5	2	1	198

* see Table 2

experience and of the information on road quality included on USGS maps. Travel time was computed using a GIS software package, IDRISI, a "grid-based geographic system." The grid units into which the mesa was divided were 100 meters square. Travel time was "measured as the least effort in moving over a friction surface" (Eastman 1990:203). Two friction surfaces were combined in the analysis, a road surface and a terrain surface. In the case of the road friction surface, the friction value is a function of speed of travel: 30 mph has a friction value of 1, 15 mph a value of 2, 7 mph a value of 4, and 2 mph a value of 16. For the terrain friction surface, slopes of greater than 10 percent were assigned an increased friction value, and cliffs were given a high enough friction value to stop travel entirely.

Figure 8 shows travel time, in half-hour increments, to all portions of Perry Mesa from the point where Bloody Basin Road climbs onto the mesa. For most sites, computed travel time is less than three hours. Inspection suggests that the absolute values produced by this analysis are, at best, accurate to the half hour. The relative values of travel time are probably accurate to within a half-hour time interval either way. Also, the travel-time model includes an unexplained anomaly that should be mentioned. Several sites on the lower left of the map are in an area with a travel time in excess of three hours, though it appears that the time

should be between two and a half and 3 hours.

"Focal Point" Travel Time

The cliffs are just one possible focus of pothunter activity on Perry Mesa. In addition, pothunters may be attracted initially to the large, well-known sites on the mesa, just as recreationists are drawn to trails, campgrounds, and other designated locations. If so, and if the pothunters then work out from these focal points, the occurrence or severity of vandalism might drop off away from the large sites. A major problem in operationalizing this prediction is identifying the focal sites. For purposes of this analysis, the four largest sites on the mesa were defined as focal. These include Squaw Creek Ruin, Pueblo La Plata, Pueblo Pato and ARIZ N:16:45(PC). All of these sites include 100 or more rooms in one or more room blocks. Travel time from these focal sites was calculated using the MAP ANALYSIS PACKAGE, developed for Harvard University by Dana Tomlinson. The analysis used grid units 100 meters on a side; rate of travel was set at 2 mph (a comfortable walking pace). Figure 9 shows travel time from the focal sites to other parts of the mesa, in half-hour increments. The model should have been "turned off" at well under three hours: travel time up to 1 1/2 hours, in quarter-hour increments, would have been preferable.

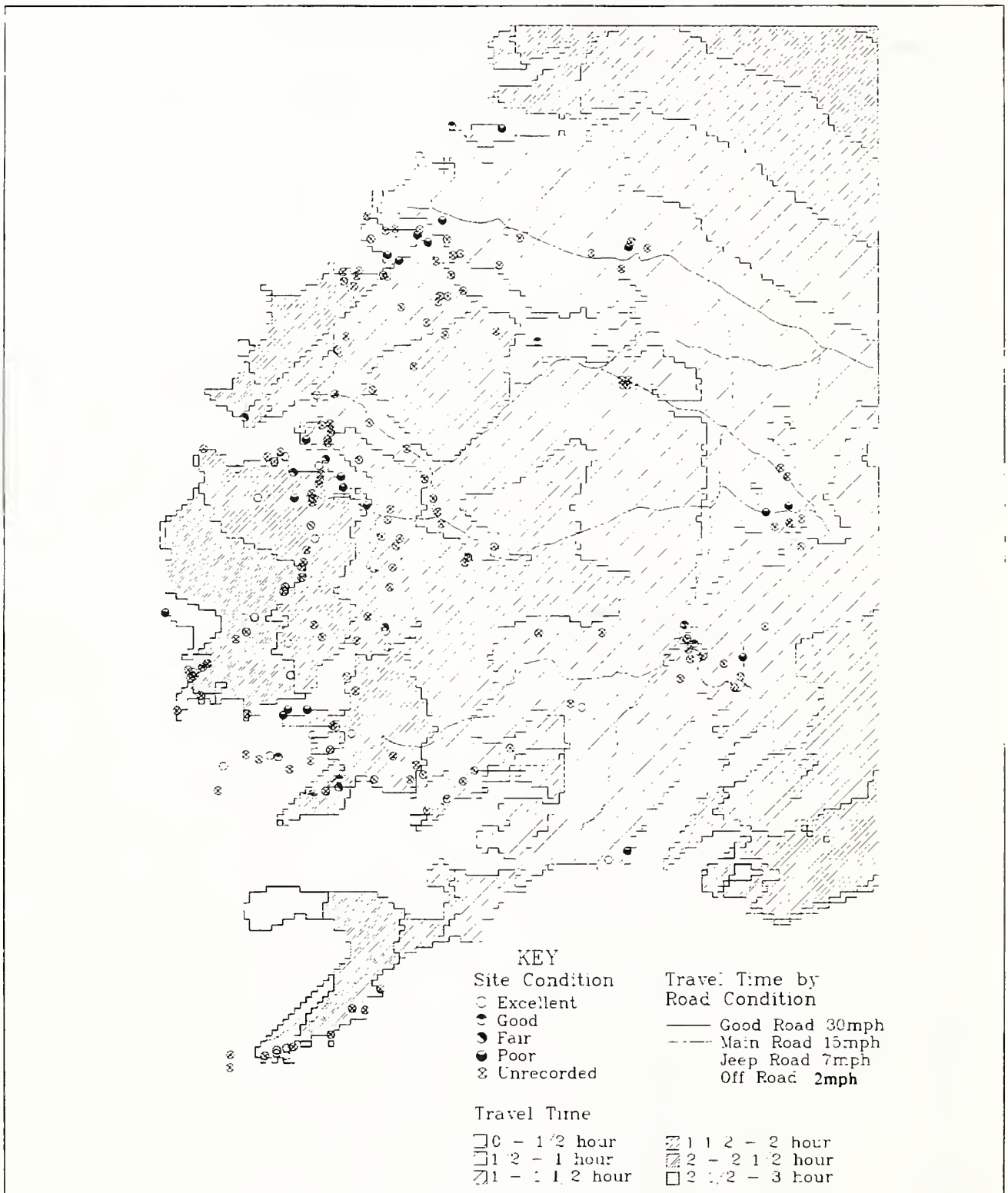


Figure 8. Plot of "down-the-line" travel-time model.

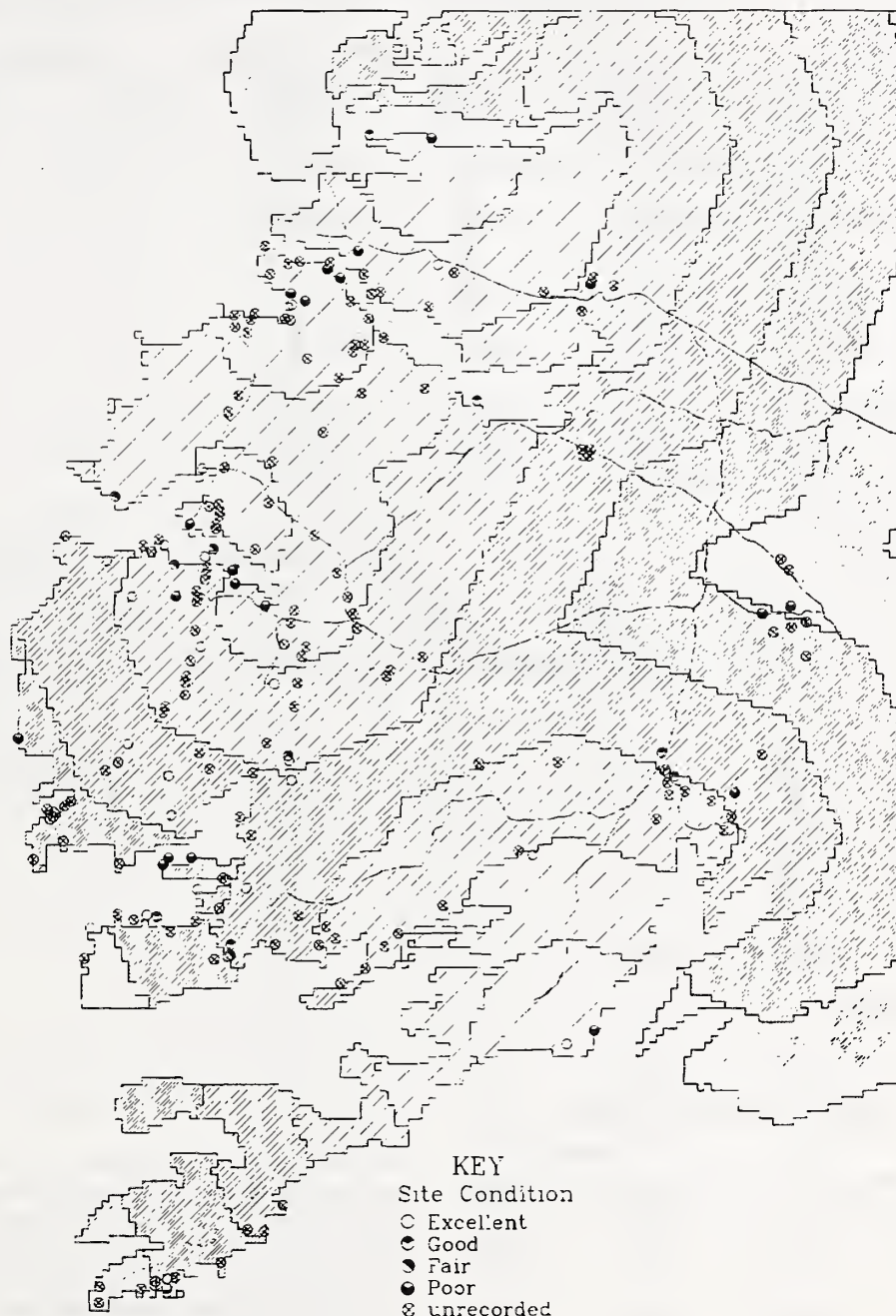


Figure 9. Plot of "focal site" travel-time model.

Table 10. Site Size Class by Distance from Road (in meters).

Size Class*	Distance from Road					
	0-200	200-400	400-600	600-800	800-1000	1000-1200
0	10	7	2	2	2	0
1	59	28	16	11	6	4
2	11	2	3	1	0	2
3	2	0	0	0	0	0
4	4	0	0	0	0	0
5	1	0	1	0	0	0
6	2	2	0	0	0	0
7	1	0	1	0	0	0
10	0	0	0	0	1	0
11	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	93	39	23	14	9	6

Size Class	Distance from Road					Total
	1200-1400	1400-1600	1600-1800	1800-2000	>2000	
0	0	0	0	0	0	23
1	2	1	3	2	1	133
2	0	1	0	0	0	20
3	0	0	0	0	0	2
4	0	1	1	0	0	6
5	1	0	0	0	0	3
6	0	0	0	0	0	4
7	0	0	1	0	0	3
10	0	0	0	0	0	1
11	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>
Total	3	3	5	2	1	198

* see Table 4

Table 11. Site Distribution by Condition.

Condition*	Number	Percent	Cumulative	
			Frequency	Percent
Excellent	25	44.6	25	44.6
Good	6	10.7	31	55.4
Fair	5	8.9	36	64.3
Poor	20	35.7	56	100.0

* Based on amount of site (surface area) with pothunting damage:

Excellent (0 percent)	Good (<25 percent)
Fair (25-50 percent)	Poor (>50 percent)

Site Richness

We assume that pothunters do their best to dig in places that will give a good return of the objects they are seeking. The question arises of how pothunters assess the richness of a site. Possibly, the amounts and kinds of surface artifacts are taken as an indicator of a site's pothunting potential. As a former pothunter stated, "the surface around most pueblos had hundreds of projectile points, stone axes, shell beads, turquoise pendants, manos and metates, and a large variety of other artifacts. Another source of artifacts was the backdirt of pothunters" (Chapter 3, page 21). The value of this indicator of site richness would, of course, be reduced as the surface artifacts were collected.

Table 12. Primary Site Type by Condition.

Site Type 1*	Number (Row Pct)	Condition**				Total
		Excellent	Good	Fair	Poor	
1	2 (8.70)	3 (13.04)	3 (13.04)	15 (65.22)		23
2	3 (60.00)	0 (0.00)	2 (40.00)	0 (0.00)		5
7	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)		1
8	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)		1
1/11	14 (63.64)	3 (13.64)	0 (0.00)	5 (22.73)		22
18	4 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)		4
Total	25	6	5	20		56

* see Table 2

** see Table 11

Table 13. Site Size Class by Condition.

Size Class*	Number (Row Pct)	Condition**				Total
		Excellent	Good	Fair	Poor	
0	9 (81.82)	0 (0.00)	2 (18.18)	0 (0.00)		11
1	14 (63.64)	3 (13.64)	0 (0.00)	5 (22.73)		22
2	2 (16.67)	3 (25.00)	3 (25.00)	4 (33.33)		12
3	0	0	0	0		0
4	0 (0.00)	0 (0.00)	0 (0.00)	2 (100.00)		2
5	0 (0.00)	0 (0.00)	0 (0.00)	2 (100.00)		2
6	0 (0.00)	0 (0.00)	0 (0.00)	2 (100.00)		2
7	0 (0.00)	0 (0.00)	0 (0.00)	1 (100.00)		1
10	0 (0.00)	0 (0.00)	0 (0.00)	1 (100.00)		1
11	0 (0.00)	0 (0.00)	0 (0.00)	3 (100.00)		3
Total	25	6	5	20		56

* see Table 4

** see Table 11

Table 14. Site Visibility by Condition.

Visibility Number (Row Pct)	Condition*				Total
	Excellent	Good	Fair	Poor	
0	25 (55.56)	6 (13.33)	5 (11.11)	9 (20.00)	45
1	0 (0.00)	0 (0.00)	0 (0.00)	11 (100.00)	11
Total	25	6	5	20	56

*see Table 11

Table 15. Secondary Site Type by Condition.

Site Type 2*	Condition**				Total
	Excellent	Good	Fair	Poor	
1	2	4	3	10	19
2	3	0	1	0	4
4	1	0	0	0	1
7	1	0	0	2	3
8	3	1	1	4	9
1/11	11	1	0	4	16
18	4	0	0	0	4
Total	25	6	5	20	56

* see Table 2 ** see Table 11

Several kinds of evidence relating to surface artifacts were obtained that might relate to a site's perceived richness (Appendix A: Specimen Record). For example, the number of surface sherds was estimated using the following classes: none, present, 1-25, 26-50, 51-100, 100-500, and 501+. The recorded sites of Size Class 1 (1-9 rooms) had varying numbers of sherds; most fell between 1-25 sherds and 101-500 sherds. Most sites of Size Class 2 (10-19 rooms) had 101-500 or 501+ sherds.

All sites above Size Class 2 were in the category of 500+ sherds. Painted sherds were also recorded, though even at the large sites only a handful were noted. Because counts are small, we consider presence/absence data more reliable than counts. Painted sherds were recorded at 40 percent of Size Class 1

sites, at 73 percent of Size Class 2 sites, and at all larger sites.

Discussion

These analyses and accompanying tables and maps reinforce a point made earlier, that most sites on the mesa have fewer than ten rooms. All large sites, with the exception of those on the east side of the mesa, are near a cliff. Because of this homogeneity, the variable, distance from cliff, is unlikely to contribute to the analysis of site vulnerability, at least for the larger sites. Most recorded sites are within 600 meters of a road, and almost any point on the mesa can be reached in less than three hours. In other words, the mesa is "small" in relation both to the density of its road network and to the time necessary to traverse it.

Table 16. Site Distance from Road (in meters) by Condition.

Distance Number (Row Pct)	Condition*				Total
	Excellent	Good	Fair	Poor	
0-200	9 (39.13)	3 (13.04)	1 (4.35)	10 (43.48)	23
200-400	7 (63.64)	0 (0.00)	2 (18.18)	2 (18.18)	11
400-600	4 (57.14)	1 (14.29)	0 (0.00)	2 (28.57)	7
600-800	0 (0.00)	0 (0.00)	1 (100.00)	0 (0.00)	1
800-1000	2 (50.00)	1 (25.00)	0 (0.00)	1 (25.00)	4
1000-1200	2 (50.00)	1 (25.00)	0 (0.00)	1 (25.00)	4
1200-1400	0 (0.00)	0 (0.00)	0 (0.00)	1 (100.00)	1
1400-1600	0 (0.00)	0 (0.00)	1 (100.00)	0 (0.00)	1
1600-1800	0 (0.00)	0 (0.00)	0 (0.00)	2 (100.00)	2
1800-2000	1 (50.00)	0 (0.00)	0 (0.00)	1 (50.00)	2
>2000	0 —	0 —	0 —	0 —	0 —
Total	25	6	5	20	56

* see Table 11

Table 17. Site Distance from Road (in meters) by Condition: Type 1 Sites.

Distance	Condition*				Total
	Excellent	Good	Fair	Poor	
0-400	1	1	2	9	13
400-800	1	1	0	1	3
800-1200	0	1	0	2	3
1200-1600	0	0	1	1	2
1600-2000	0	0	0	2	2
Total	2	3	3	15	23

* see Table 11

Table 18. Site Distance from Road (in meters) by Condition: Type 1/11 Sites.

Distance	Condition*				Total
	Excellent	Good	Fair	Poor	
0-400	9	2	0	3	14
400-800	2	0	0	1	3
800-1200	2	1	0	0	3
1200-1600	0	0	0	0	0
1600-2000	1	0	0	1	2
> 2000	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	14	3	0	5	22

* see Table 11

Table 19. "Down-the-Line" Travel Time to Site (in Hours) by Condition: All Site Size Classes.

Travel Time Number (Row Pct)	Condition*				Total
	Excellent	Good	Fair	Poor	
.00-.49	1 (11.11)	1 (11.11)	1 (11.11)	6 (66.67)	9
.50-.99	3 (25.00)	3 (25.00)	0 (0.00)	6 (50.00)	12
1.00-1.49	3 (75.00)	0 (0.00)	0 (0.00)	1 (25.00)	4
1.50-1.99	8 (53.33)	1 (6.67)	3 (20.00)	3 (20.00)	15
2.00-2.49	4 (50.00)	0 (0.00)	1 (12.50)	3 (37.50)	8
2.50-2.99	4 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	4
≥3.00	<u>2</u> <u>(50.00)</u>	<u>1</u> <u>(25.00)</u>	<u>0</u> <u>(0.00)</u>	<u>1</u> <u>(25.00)</u>	<u>4</u>
Total	25	6	5	20	56

The Dependent Variable – Site Condition

The dependent variable, site condition, is our primary measure of vandalism damage. The variable includes four categories based on the amount of a site that has been dug: excellent (0 percent), good (<25 percent),

fair (25-50 percent), and poor (>50 percent). The figures refer to the surface area of a site and do not consider the depth, or volume, of damage. In the case of sites with masonry architecture, the percentages apply specifically to the room blocks. This framework for measuring damage to sites was borrowed from

Table 20. "Down-the-Line" Travel Time to Site (in Hours) by Condition: Site Size Class < 2.

Travel Time		Condition*			
Number (Row Pct)	Excellent	Good	Fair	Poor	Total
.00-.49	1 (14.29)	1 (14.29)	1 (14.29)	4 (57.14)	7
.50-.99	3 (37.50)	3 (37.50)	0 (0.00)	2 (25.00)	8
1.00-1.49	3 (75.00)	0 (0.00)	0 (0.00)	1 (25.00)	4
1.50-1.99	8 (61.54)	1 (7.69)	3 (23.08)	1 (7.69)	13
2.00-2.49	4 (66.67)	0 (0.00)	1 (16.67)	1 (16.67)	6
2.50-2.99	4 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	4
>3.00	2 (66.67)	1 (33.33)	0 (0.00)	0 (0.00)	3
Total	25	6	5	9	45

* see Table 11

Table 21. Site Distance from Cliff (in meters) by Condition.

Distance		Condition*			
Number (Row Pct)	Excellent	Good	Fair	Poor	Total
0-200	14 (41.18)	2 (5.88)	4 (11.76)	14 (41.18)	34
200-400	4 (44.44)	2 (22.22)	1 (11.11)	2 (22.22)	9
400-600	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	1
600-800	1 (50.00)	0 (0.00)	0 (0.00)	1 (50.00)	2
800-1000	3 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	3
1000-1200	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	1
1200-1400	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	1
>1400	0	0	0	0	0
Total	25	4	5	17	51

* see Table 11

Wylie, Nagel, and Kvamme's recent study of vandalism in southeastern Utah (Wylie and Nagel 1989; Kvamme 1990). Kvamme (1990:21) has identified a weakness in this aspect of their study, namely that the sites were not categorized on the basis of measurements but of impressionistic guesses. It should be noted in this regard that, although this variable includes a subjective component, all of the "measurements" used by the Perry Mesa study were determined by one individual on the basis of a detailed examination of the sites. Table 11 presents a breakdown of sites by condition. It shows that most sites are in either excellent or poor condition and that relatively few sites are in intermediate (i.e., fair or poor) condition. In other words, if pothunters have dug into a site at all, the odds are that they have done considerable damage to it.

Analysis of Site Condition

Tables 12 through 25 show the relationship between the dependent variable -- site condition -- and the independent variables included in the analysis. These tables include various subsets of the 56 sites that were recorded, at some level, by the Perry Mesa Site Vandalism Study.

1. Site type is generally considered to play a significant role in determining a site's vulnerability to vandalism. Table 12 is a cross-tabulation of site condition and primary site type. It shows that site type is in fact important in the Perry Mesa case. Among sites with surface architecture, Type 1 sites (those with more than 10 rooms) and Type 1/11 sites (those with 1 to 9 rooms) have mirror-image distributions of site condition. That is, the majority of Type 1 (larger) sites are in poor condition, whereas the majority of Type 1/11 (smaller) sites are in excellent condition. All Type 18, probable habitation, sites for which data are available are in excellent condition. Finally, there appears to be no pattern in the distribution by condition of Type 2, resource procurement, sites.

2. As noted, the majority of Type 1 sites ≥ 10 rooms) are in poor condition. Table 13 (Size Classes 2-11) shows the condition of Type 1 sites broken down by site size. It is noteworthy that all of the sites of this type that are in better than poor condition fall into the smallest relevant size class and have between 11 and 20 rooms. Conversely, all Type 1 sites with more than 20 rooms are in poor condition.

3. Table 14 presents much the same data as Table 13, but from a different perspective. Table 14 is a cross-tabulation of site condition and visibility. The distinction here is between less visible (Class 0) and more

visible (Class 1) sites. The break between the two categories is at about 20 rooms. Table 14 indicates that all of the more visible sites are in poor condition, whereas the less visible sites are in variable condition.

Figure 10 is a map of all but the southernmost portion of Perry Mesa showing condition of sites in three size categories: 1-9 rooms (Type 1/11), 10-19 rooms (Type 1, in part), and 20+ rooms (Type 1, in part). That is, it includes only sites with surface evidence of architecture. The map was produced by linking the database with AUTOCAD, a computer aided drafting (CAD) software package.

4. Table 15 shows the relationship between site condition and secondary site type. The condition of Type 7, defensive, and Type 8, rock art, sites ranges from good to poor and can be considered a function of the sites' primary type designations. In other words, if defensive and rock-art sites have been vandalized, it is because they have masonry rooms.

5. Some previous studies of vandalism have suggested that ease of access has a significant impact on the vulnerability of archeological sites to vandalism (see Chapter 2: Previous Studies of Site Vandalism). Table 16 is a cross-tabulation of site condition and one measure of accessibility, distance to the nearest road. At least among the numerous sites within 600 meters of the road, there appears to be no relationship between these variables.

Tables 17 and 18 provide similar breakdowns for the two most abundant site types, Type 1, residential, and Type 1/11, residential/temporary residence. In both tables, the distance categories have been collapsed to compensate for the reduced sample size. In neither case does there appear to be any relationship between site condition and distance from the road. This conclusion is, however, suspect, because so few sites of either type are located more than a few hundred meters from a road.

6. Table 19 shows the relationship between condition and travel time from the northwest corner of the mesa for sites of all types. There is a slight tendency for sites with travel times of less than 1 hour to be in poor condition and for sites with travel times greater than 2 1/2 hours to be in excellent condition. Table 20 provides a similar breakdown for the less visible sites, those of Visibility Class 0. In this case, the relationship between travel time and condition for times under 1 hour is unclear, whereas sites with travel times over 1 hour tend to be in excellent condition. These data suggest that, for the smaller, less visible sites, being further out on the mesa may provide some degree of

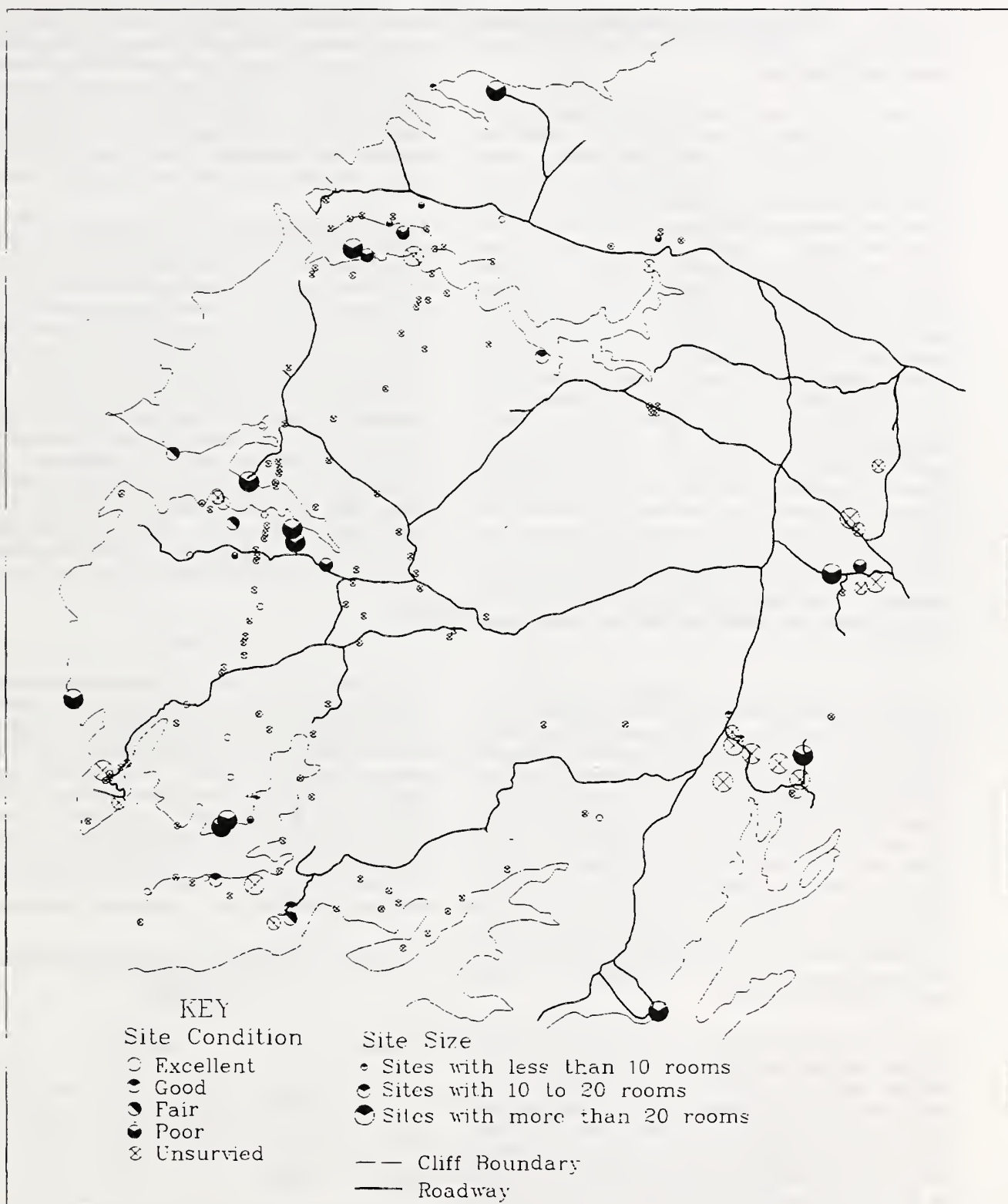


Figure 10. Map of Perry Mesa showing sites with surface evidence of architecture

protection. The patterning in the data is not conclusive, however, and the relationship should be tested against additional cases.

7. Table 21 is a cross-tabulation of the variables site condition and distance from cliff for the data set including sites of all types. These data show at best a weak tendency for sites over 800 m from the cliff to be in excellent condition -- the problem being that there are too few sites over 800 meters to demonstrate a strong relationship. Tables 22 and 23 are cross-tabulations of the two variables for sites of the two most abundant types: 1, residential, and 1/11, residential/temporary residence. Distance categories have been collapsed to compensate for a reduction in sample size. Table 22 shows that all Type 1 sites are relatively close to a cliff; it is not possible to assess the relationship between site condition and distance from a cliff for sites of this type, because one of these "variables" does not vary. Table 23, which includes Type 1/11 sites, is more informative. The data suggest a tendency for sites located far from the cliff to be in better condition than those near the cliff. The relationship cannot be considered convincing, however, because of the small sample of sites that are more than 800 m from a cliff. Nevertheless, the relationship does constitute a reasonable hypothesis that should be tested against additional cases from the central portion of the mesa.

8. Table 24 shows the relationship between site condition and travel time from the four "focal" sites identified for the analysis. It was predicted that condition would improve as travel time increased. The data fit this prediction -- up to travel times of two hours. The focal-point model should break down at some point, perhaps on the order of one and a half hours. It should be noted that Table 24 includes sites with over 20 rooms, which are in poor condition no matter what their location. Table 25 eliminates these sites. That is, it includes only the smaller, less visible sites. For this data set, there is some tendency for sites that are far from the focal sites to be in excellent condition; on the other hand, sites that are close to the large, focal sites are in variable condition.

9. Data tabulations were examined for a relationship between site condition and surface ceramic data. The analysis focussed on sites of Size Classes 1 (1-9 rooms) and 2 (10-19 rooms), because these categories have larger sample sizes ($n=15$ and $n=11$) than the other size classes and because previous analyses had shown that these size categories were responsible for the greater part of the variation in site condition. Holding site size constant, there appears to be no relation between site condition and the number of

sherds recorded, nor between condition and the presence or absence of painted sherds. Holding site size and number of sherds constant, there is no relation between site condition and the presence or absence of painted pottery. These negative results may be a function of the limited nature of artifactual data we collected, and therefore, further attempts should be made to measure the perceived richness of sites.

An attempt was also made to measure the interaction among the independent variables by means of multivariate analysis. In these analyses, different measures, or scores, of site attractiveness were computed as weighted sums of various combinations of variables. In one case, for example, a site was given a score of 1 to 3 depending on travel time, a score of 1 or 2 depending on visibility, and a score of 1 or 2 depending on distance from the cliff. These values were then summed to produce an attractiveness score for each site. This new independent variable was then used to predict site condition. This approach is similar to one used by Wylie, Nagel, and Kvamme (Wylie and Nagel 1989; Kvamme 1990) in their study of vandalism in San Juan County, Utah. This and similar analyses were unproductive, in that they failed to contribute to the explanation of variation in site condition.

Discussion

To summarize, bivariate analysis indicates that one variable, primary site type, can be used to "predict" a site's condition. That is, for sites of Types 1/11 and 18, the probability of damage by vandals is relatively low, whereas for sites of Type 1, the probability is high. Some Type 1 sites have not been dug into, for reasons that can be at least partly explained. All of the undamaged Type 1 sites are estimated to have between 10 and 19 rooms; that is, they are close to Type 1/11 sites in size. On the other hand, all Type 1 sites with more than 20 rooms have been vandalized and

Table 22. Site Distance from Cliff (in meters) by Condition: Type 1 Sites.

Distance	Condition*				Total
	Excellent	Good	Fair	Poor	
0-400	<u>2</u>	<u>3</u>	<u>3</u>	<u>12</u>	<u>20</u>
Total	2	3	3	12	20

* see Table 11

Table 23. Site Distance from Cliff (in meters) by Condition: Type 1/11 Sites.

Distance	Condition*				Total
	Excellent	Good	Fair	Poor	
0-400	8	1	0	4	13
400-800	2	0	0	1	3
800-1200	3	0	0	0	3
1200-1600	1	0	0	0	1
1600-2000	0	0	0	0	0
>2000	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	14	1	0	5	20

* see Table 11

Table 24. "Focal-Point" Access to Site (in Hours) by Condition.

Access 2 Number (Row Pct)	Condition*				Total
	Excellent	Good	Fair	Poor	
.00-.49	2 (18.18)	1 (9.09)	1 (9.09)	7 (63.64)	11
.50-.99	3 (37.50)	0 (0.00)	1 (12.50)	4 (50.00)	8
1.00-1.49	6 (50.00)	2 (16.67)	2 (16.67)	2 (16.67)	12
1.50-1.99	6 (66.67)	2 (22.22)	0 (0.00)	1 (11.11)	9
2.00-2.49	4 (36.36)	1 (9.09)	1 (9.09)	5 (45.45)	11
≥2.50	<u>4</u> <u>(80.00)</u>	<u>0</u> <u>(0.00)</u>	<u>0</u> <u>(0.00)</u>	<u>1</u> <u>(20.00)</u>	5
Total	25	6	5	20	56

Table 25. "Focal-Point" Access to Site (in Hours) by Condition: Site Size Class <2.

Access 2		Condition*			
Number (Row Pct)	Excellent	Good	Fair	Poor	Total
.00-.49	2 (28.57)	1 (14.29)	1 (14.29)	3 (42.86)	7
.50-.99	3 (50.00)	0 (0.00)	1 (16.67)	2 (33.33)	6
1.00-1.49	6 (50.00)	2 (16.67)	2 (16.67)	2 (16.67)	12
1.50-1.99	2 (75.00)	2 (25.00)	0 (0.00)	0 (0.00)	8
2.00-2.49	4 (57.14)	1 (14.29)	1 (14.29)	1 (14.29)	7
≥2.50	4 (80.00)	0 (0.00)	0 (0.00)	1 (20.00)	5
Total	25	6	5	9	45

*see Table 11

are in poor condition. These data suggest that, for the purpose of studying site vandalism, it might be better to place the break between small and large sites at 20± rooms rather than at 10± rooms as our definition of Type 1/11 and Type 1 sites does. This is also our dividing point between sites that are less visible and more visible.

Some Type 1/11 sites have in fact been vandalized, as have some Type 1 sites with 10 to 19 rooms. The analysis identified several variables that might explain why these sites are more vulnerable to vandalism than other sites of comparable size. These variables include travel time to the site from the northwestern corner of Perry Mesa, distance from the nearest cliff, and distance from the nearest large, "focal" site. It is important to note that none of these independent variables produced a strong relationship with the dependent variable of site condition. Instead, the relationships provide hypotheses that should be tested against additional data.

To repeat, *all* sites in our sample with more than 20 rooms have been severely damaged by vandals. Paradoxically, this most positive result of our analysis placed serious constraints on our effort at model building. That is, two equivalent variables -- site size

for sites over 20 rooms and site visibility -- are perfect predictors of site condition. Thus, these sites, which account for 20 percent of our sample and for most of the variation in site size, drop out of the analysis at the first step. This reduced the modeling problem to one of explaining variation in the condition of sites with fewer than 20 rooms.

We met one major difficulty in attempting to model the condition of the smaller sites. Most recorded sites on Perry Mesa are near to cliffs, near to roads and, to some extent, near to the large, focal sites. This is a function of the limited amount of survey that has been conducted in the central portion of the mesa. As a result of this distribution of recorded sites, our random sample of sites included relatively few cases away from the cliffs, the roads, and the focal sites. In retrospect, it would have been beneficial to our analyses to have sampled these sites at a higher rate. For the future, recorded sites in the central portion of the mesa should be visited, to provide a test of the hypotheses identified earlier. Also, a sample of this portion of the mesa should be surveyed, to increase the inventory of recorded sites in this area.

There is a second, potential problem in explaining variation in the condition of small sites that should be

mentioned. It relates to the nature of human behavior represented by pot hunting at sites of different sizes. Severe damage to large sites is the result of activity by many individuals on numerous occasions. That is, it is the result of many events. This is the kind of situation in which one can hope to identify regularities in human behavior. On the other hand, a small site could be severely damaged by one individual during a single, relatively brief visit. This increases the chances that damage to a site will be the result of nonpatterned, idiosyncratic behavior. This is, of course, the worst possible situation for explaining human behavior. On the other hand, regularities might emerge in a data set of this kind, if the sample size were large enough. In the Perry Mesa case, our sample of 45 small sites may simply be too small for patterns to emerge. By comparison, a sample of only 11 large sites was large enough to identify a pattern in the data, namely, that all the sites of this kind are severely damaged.

As noted, the attempt at multivariate analysis of the independent variables was unsuccessful. In part, this is probably a result of our approach to measuring site attractiveness. The method of producing an attractiveness variable by the summing of scores on different variables has a major weakness -- it is difficult to arrive at a rigorous, non-a priori method of weighting variables. A better method might be to apply "logit" analysis, which provides a mathematical algorithm for using continuous variables, such as travel time, to predict a categorical variable like site condition (K. Kvamme, personal communication 1990). This approach should be tried, once the weaknesses in our sample of sites have been overcome in the manner indicated and, it is to be hoped, the explanatory power of our independent variables has been increased.

Factors Affecting Site Vulnerability

As the preceding discussion indicates, our effort to construct a model of site vulnerability on Perry Mesa has been only partially successful. Its major weakness is that it does not provide a convincing explanation of why some of the smaller sites on the mesa have been damaged, while others have been spared. We have, however, identified several variables that may explain this variation in vulnerability.

The model-building effort was concerned primarily with variation in the condition of sites on Perry Mesa. It is also necessary to consider the mesa as a whole. From this broader perspective, what has made sites on Perry Mesa vulnerable to looting is simply their

presence on that mesa. According to a former who knows the mesa well,

A variety of sites were known to most people, however, the big pueblos were the ones that were most vandalized because everyone knew they were loaded with quality artifacts.... One didn't have to dig to find artifacts. The surface around most pueblos had hundreds of projectile points, stone axes, shell beads, turquoise pendants, manos and metates, and a large variety of other artifacts [Chapter 3].

It is clear from the statements of this and other informants, from the evidence that s came from as far away as Utah, from the sheer magnitude of digging and collecting of surface artifacts from the late 1950s on, and from the number of fairly large ruins present that Perry Mesa gained and maintained a reputation as a rich ground for finding desirable artifacts. This is the first reason for the extensive damage to sites on the mesa. The second is that essentially all parts of the mesa are accessible by car, or by car and an easy hike.

The third factor contributing to the vulnerability of sites on Perry Mesa to vandalism is that digging there was for many years essentially risk free. Again, statements of informants, supported by the evidence of camp sites at most if not all of the larger ruins, indicate that individuals *and groups* visited the mesa many times, drove to their favorite sites, and stayed to dig for weekends or even longer. Much of the damage occurred at a time when Federal and state agencies were unwilling or unable to actively protect the sites on Perry Mesa. Even to this day, only Jones, Jones, and Gevara and, possibly, one other group have, to our knowledge, been prosecuted for looting sites on Perry Mesa. Nevertheless, digging continues, if at a slower rate than at earlier times. This would suggest that some s have been willing to adjust their activities to what we would assume to be an increased level of risk

Finally, it should be mentioned that much of the damage to sites on the mesa was done by people who, at the time they were digging, believed they were doing nothing wrong. Most of them probably still feel that way today, even if they know that digging in Indian sites is illegal. Recall that "pot hunting and surface collecting was looked upon as an admirable thing in the 1950s by most people. Various families built up huge collections, and 'ribbons' were given at the Yavapai county fair for the best" (Chapter 3).

CHAPTER 6

CHRONOLOGY OF SITE VANDALISM

One of the goals of the Perry Mesa Site Vandalism Study is to reconstruct the history of vandalism on the mesa. Some data relevant to this history come from site forms that were completed when the sites were originally recorded, generally in the 1960s or 1970s. Evidence of this kind is included in the individual site descriptions in Appendix C. Also worth mentioning in this regard is the work done on Perry Mesa by the Museum of Northern Arizona's EBASCO Project in the mid-1970s. The report on this project (Fish et al. 1975:Table 5) includes a tabular summary of data on vandalism for sites on Perry Mesa, on Black Mesa, and in nearby parts of the canyon of the Agua Fria -- unfortunately for our purposes, the data are grouped for the three areas. Among pueblos with 11 to 100 rooms (equivalent to our Type 1), 57 percent showed evidence of major vandalism, 34 percent showed evidence of minor vandalism, and 9 percent were undisturbed (n=44). By comparison, 65 percent of Type 1 sites recorded by the Perry Mesa Site Vandalism Study are in poor condition (>50 percent dug), 26 percent are in good or fair condition (<50 percent dug), and 9 percent are untouched (Table 12). These figures are quite similar, though it should be remembered that all of the sites included in the present study with more than 20 rooms are in poor condition. It does appear, at any rate, that substantial damage had been done to the larger pueblos by the 1970s. Among pueblos tabulated by Fish et al. with 1-10 rooms (equivalent to Type 1/11), three percent had evidence of major vandalism, six percent had evidence of minor vandalism, and 91 percent were untouched (n=101). The Type 1/11 sites recorded by the present study appear to be in considerably worse shape: 23 percent are in poor condition, 14 percent are in good or fair condition, and 64 percent are untouched (Table 12). This would suggest that numerous small pueblos were vandalized sometime between the mid-1970s and the present and, possibly, that the rate at which these sites have been vandalized was higher for some interval after the mid-1970s than it was before that time.

Two components of the Perry Mesa Site Vandalism Study have provided data on the history of site vandalism: the oral history and archeological fieldwork. Relevant archeological data collected by the project include site maps showing areas damaged by vandals, descriptions of damage, and observations on trash, equipment, and facilities (hearths, windbreaks, etc.) left by vandals. Although all of this evidence is potentially useful for studying vandalism in general, it is not all valuable for reconstructing the *history* of vandalism. The writing of history requires observations at different times, whereas the information collected by the Site Vandalism Study applies, at face value, to one time, specifically the summer of 1990.

Although existing site records provide data from a second, earlier time, little of this information relates to vandalism. Inferring a temporal dimension from the available evidence is a difficult task. The problem, in fact, is one of inferring and integrating multiple temporal dimensions that are provided by various kinds of chronological evidence from individual sites, room blocks, rooms, and even pot holes (Ahlstrom 1985). Most of this evidence applies to temporal scales at an ordinal, or relative, level of measurement; that is, it indicates the sequence of past events, but not a calendrical date for those events. It is often possible, for example, to distinguish older digging from more recent digging. Only rarely can events be assigned to an interval time scale, that is, one that measures time in years or other calendrical periods. Often, this dating is at low resolution, as for example when it can be inferred that an event took place either before or after the date when a site was initially recorded.

REPEAT PHOTOGRAPHY

As noted, old photographs were matched at eight of the Perry Mesa sites. Site AR-03-12-01-44 produced the most valuable record of repeat photographs; it includes pictures taken at three different times, 1968, 1978, and 1990. A portfolio of repeat photographs from this site appears in Appendix D. Useful data were also obtained from matched photos at AR-03-12-01-39, NA 11414, NA 11439, NA 11687 and NA 11785 (Appendix C).

DATING VANDALISM: PHYSICAL EVIDENCE

Tables 26 and 27 present a framework for inferring time from the physical evidence of vandalism that can be observed at sites on Perry Mesa. The observations that contributed to the framework's development are summarized in Appendix C. Many of the basic elements of the framework were borrowed from previous vandalism studies (for example, Wylie and Nagel 1989; Kvamme 1990), though its overall form, as well as many of its detailed features, are the result of knowledge gained on Perry Mesa. The framework identifies four dimensions, which, for reasons to be discussed, are best thought of as basically typological and only secondarily chronological. That is, the difference between two points along a dimension does not always relate to change over time. The framework can be viewed from two perspectives -- with respect either to developments along one dimension (Table 26) or to the relationships between different dimensions (Table 27). The following discussion of these dimensions deals first with ordinal scale dating and then adds inferences, as appropriate, concerning calendrical intervals (Table 27).

Table 26. Physical Evidence of Vandalism: I

Condition of backdirt	Sides of holes	Revegetation	Condition of bone
"Fresh"	Vertical	None	Fresh, solid
Washed down	>45 degrees	Sparse grass	Weathered, solid
Recognizable	<45 degrees	Grass/ snakeweed/ saltbrush	Friable
Not recognizable	Filled in/ shallow depression	Dense shrubs/ mature legumes	

1. The Profiles of Holes Dug by Pothunters. The premise underlying this dimension is that the vertical walls of a hole dug in earth will erode down first to an angle between 90 and 45 degrees, then to an angle of less than 45 degrees, and finally to an angle of only a few degrees, that is, to form a recognizable but shallow depression. The problem in interpreting this dimension chronologically is that the walls of the hole may have been less than vertical when the pothunter walked away from it. Also, variation in soil texture and the presence of rocks or bushes can produce differences in the rate of erosion, for example within holes, between holes located along or away from masonry walls, or between sites. Between-site variation was hypothesized for sites on the mesa proper as opposed to those in the hilly country on the mesa's east flank. In the latter area, the natural surface material is the product of decomposing granite and contains numerous pebbles and abundant sand-sized particles. On the mesa, the sediment is fine-grained, consisting of silt- and clay-sized particles. It was our impression that the former material would erode, and be revegetated, more slowly than the latter.

2. The Status of Backdirt Thrown from Holes. This dimension applies primarily to the erosion of backdirt. However, the first step -- "fresh-looking," crumbly earth (Table 26) -- pertains as well to dirt at the bottom of recently dug holes, at least in some cases. The exceptions involve the bottoms of holes where the fill has been "freshened" recently by burrowing rodents or rooting javelina. Whatever its source, the fresh-looking dirt appears not to have been smoothed by rainfall or by trampling, and it has probably been in place for no more than a few months. At its opposite end, this dimension includes cases in which a depres-

sion, usually within a room, suggests digging, but whatever backdirt resulted from that activity has been thoroughly obscured by erosion and revegetation. In some cases, the room may not have been dug at all, but instead the evidence may relate to the collapse of an abandoned structure and to subsequent erosion. In other words, it may be difficult to distinguish very old digging from no digging at all.

3. The Revegetation of Holes and Associated Backdirt. It is clear that the surface evidence of damage by pothunters "heals" over time, both as a result of erosion (points 1 and 2) and revegetation. It also appears that revegetation is a successional process, that is, that it involves a sequence of plant species, the increasing maturity of longer-lived species, and increasing plant density. Revegetation seems to begin with a sparse occurrence of what are probably annual grasses. These plants are often associated with fresh-looking fill and backdirt. Next comes thicker grass, snakeweed, or both. Typically, these plants grow on fill or backdirt that has been to some extent washed down. Saltbush or shadscale, a related shrub, may also begin to grow at this stage. In some cases, saltbush four to five feet in height was found growing in holes that appeared recent, that is, no more than a couple of years old. In fact, such growth can occur within one or two years, if conditions are right (J. Tress, SWCA, personal communication 1990). The next stage involves individuals of species like prickly pear, catclaw acacia, and mesquite that have attained heights of more than a couple of feet. Our guess is that this growth requires more than a couple years, say more than three or four but less than ten. Finally, the most complete healing is indicated by mature catclaw and mesquite (five or more feet in height) and, especially, by dense stands of a variety of species, such as shadscale, yucca, prickly pear, catclaw and grasses. Such dense stands are often associated with a lack of recognizable backdirt. This level of revegetation may require from five to ten years, if not longer.

4. The Condition of Human Bone Found in or near Pothunter Holes. In their ongoing study of vandalism in southeastern Utah, Wylie, Nagel, and Kvamme (Wylie and Nagel 1989; Kvamme 1990; Kvamme, personal communication 1990) employ a variety of criteria to determine the recency of digging at sites. The project's recording form lists one criterion as "freshness of exposed bone (deteriorates in 5 years)." Although the basis for the time estimate is not given, the figure may be reasonable. In any case, it is clear that bone deteriorates over time (Table 26). One limitation in using this variable as a dating tool is the possibility of variation in the condition of bone when it is first exposed.

Table 27 shows what are thought to be the most common associations among the four dimensions included in the framework. It also gives estimated time intervals for these associations. Both the associations and, in particular, the time intervals should be thought of as reasonable first approximations, that is, as hypotheses that are in need of further study. As discussed elsewhere (Chapter 7: Recommendations), research on the healing of scars resulting from pot hunting could be a valuable component of longterm efforts to monitor the condition of archeological sites.

DATING VANDALISM: ARTIFACTUAL EVIDENCE

One category of potentially datable artifact occurred on a number of Perry Mesa sites -- the beer or soft-drink can. Table 28 summarizes beverage-can data collected on Perry Mesa. Only those sites with a sample of four or more cans are listed. With the exception of NA 11687, all of these are Type 1 sites with 10 or more rooms. The typology of beverage cans summarized in Table 28 is based on changes over the last 30 years in two aspects of beverage-can technology -- the material used in making the can, whether steel or aluminum or a combination of these metals, and the method of opening the can. The types are listed, from left to right, in the order that they were introduced (Rock 1978). Steel cans were the norm through the 1950s, steel cans with aluminum pull-tab tops appeared in 1959 and were abundant by the early 1960s, the aluminum can with pull-tab top was introduced in 1963 and was common by the late 1960s, the

aluminum can with push-button top was introduced in 1974, and the aluminum can having a "stay-with-the-can" top first appeared in 1974-1975. As is often the case with technological developments, dates when the can types were phased out are not so well established as these dates of introduction. For this reason, the types cannot serve as the basis for discrete time periods. This is only one of several weaknesses in the chronological data provided by beverage cans. Another is the small number of cans per site, relative to the amount of pot hunting activity. Also, the cans provide evidence on visitation to sites, rather than on pot hunting per se. Finally, there is generally little if any basis for relating cans to particular episodes of pot hunting.

These problems notwithstanding, there appears to be at least one valid observation that can be drawn from the beverage-can data presented in Table 28. The individual sites tend to have several different types of cans present, including types that are "far apart" in the typology. This evidence points to separate episodes of site visitation and, by extension, of pot hunting activity over several decades and is consistent with the physical evidence for multiple episodes of pot hunting discussed elsewhere.

DISCUSSION: VARIATION IN THE RATE OF VANDALISM

Data collected in the field by the Perry Mesa Site Vandalism Study suggest that the rate of vandalism on

Table 27. Physical Evidence of Vandalism: II

COND. OF BACKDIRT	Sides of Holes	Revegetation	Condition of Bone	Eestimated* Interval
"Fresh"	Vertical	<u>None</u>	<u>Fresh, solid</u>	<u>0 to 6 months</u>
		Sparse Grass	Weathered, solid	1 month to 1 year
"Fresh"	>45 degrees	Grass/ Snakeweed/	Weathered, solid	6 months to 4 years
Washed down	<45 degrees	Saltbush	Friable	
Recognizable	<45 degrees	Grass/ Snakeweed/ Saltbush	Friable	3 to 6 years
Not Recognizable	<45 degrees	Dense shrubs/	None	>6 years
Shallow depression Filled In	Mature legumes			

* essentially a guess

Perry Mesa is lower today than it was in the past. In particular, there appears to be less evidence of recent digging than one would expect if there had not been a reduction in pot hunting. Archeologists and land managers familiar with Perry Mesa and with the problem of archeological site vandalism agree that the rate of vandalism in places like Perry Mesa is slower today than it was from the late 1950s into the 1980s. Nevertheless, vandalism continues, and even small amounts of digging can be devastating to the research potential of sites that have already suffered extensive damage. It is worth noting as well that pothunters on Perry Mesa seem to be placing greater emphasis on areas around the mounds than they did in the past. Thus, the rate of destruction of these portions of sites may have increased.

There are several possible reasons for the slowing of pot hunting on Perry Mesa. It might reflect the belief that the sites there have been used up and have little

more to offer. A shift to the digging of off-mound areas would be consistent with this idea. A site-specific explanation may apply to Pueblo Pato. Although the site has been badly damaged, and digging has occurred over a number of years, there is little evidence of recent digging on the site. A contributing factor may be the destruction of a segment of the road to the site. This occurred in the early to mid-1970s as a follow-up to construction of the APS powerlines that pass within several hundred meters of the site.

A more general explanation for a slowing in the rate of vandalism -- one that would apply to the Southwest in general and not simply to Perry Mesa -- is the passing and successful enforcement of Federal antiquities legislation (Chapters 2 and 3; Fish 1981). The publicizing of cases, such as that against Jones, Jones, and Gevara, may have had a deterrent effect, particularly on those who in the past would camp at a site and dig there over a period of days.

Table 28. Beverage Can Data from Perry Mesa Sites.

<u>MATERIAL:</u>		Steel w/ Aluminum Top	Aluminum	Aluminum	Aluminum	Aluminum	
	Steel						
<u>OPENING:</u>	Church Key	Pull Tab	Church Key	Pull Tab	Push Button	Stay Tab	
<u>APPROX.* DATES:</u>	1950s, into 1960s	Early 1960s	1960s?	1960s- 1970s	1974-?	1974- present	
<u>SITE</u>							<u>TOTAL</u>
AR-32		1		1	1	1	4
AR-44	4	5	1			3	13
NA 11439	6**	2		1		2	11
NA11687					1	4	5
N:16:45		3		2			5
N:16:80				2		2	4
P. La Plata	1	4	1	3	1	2	12
Squaw Creek	4	6		4		2	16
Pueblo Pato	2	5		8		1	16
Other***	1	4		4		7	16
TOTAL	18	30	2	25	3	24	102
*see text for details **approximate number ***sites with fewer than 4 cans each							

CHAPTER 7

THE FUTURE OF PERRY MESA ARCHEOLOGICAL SITES

The solicitation by Tonto National Forest of proposals for a "Perry Mesa Archeological Site Vandalism Study" indicates that the protection of cultural resources in the Perry Mesa locality is a management priority. Although it is impossible to undo the damage of the past, we can look to the future and try to preserve, and thoughtfully utilize, the remaining cultural resources of Perry Mesa.

RESEARCH POTENTIAL

One reason to protect what remains of Perry Mesa's archeological record is for its value to anthropological research. J. Scott Wood, Archeologist for Tonto National Forest, has offered a grim assessment of the condition of that record:

Perry Mesa ... has been studied only superficially and just within the last 20 years, with only the smallest, least informative sites subjected to controlled excavation, long after the pothunters had raped and pillaged all the large sites. The devastation these sites have suffered is little short of amazing and may preclude our ever being able to obtain the detailed information necessary to answer the many questions posed by this unique prehistoric community [Wood 1985:5].

Is this an exaggeration, or are things really that bad? This question is best addressed in the context of the kind of research that could be pursued on Perry Mesa.

Although a research design for Perry Mesa is not within the scope of this study, a few comments on a research orientation are appropriate. It is noteworthy that the major pueblos on Perry Mesa and, hence, the major prehistoric communities are located on the fringes of Perry Mesa. That is, they occur in the hilly country on the east side of Perry Mesa, or at the boundary between this area and the mesa; at the south edge of the mesa, overlooking Squaw Creek; and on the west side of the mesa, overlooking the canyon of the Agua Fria or the tributary canyons that cut into the west front of the mesa. Presumably, each of these communities made use of the resources of Perry Mesa, but also of resources from the nearby areas off the mesa. What were the subsistence strategies of the various communities? Are subsistence features like agricultural rock alignments, rock-ringed roasting pits, and, possibly, the middens associated with some pueblos distributed evenly over the mesa, or are they more abundant in some areas than others. If subsistence strategies did vary, how and to what extent did the communities coordinate their economic pursuits? Also, how were the communities related socially and politically. Do the forts, "defensive" walls and compact

layout of the pueblos imply tension between the communities on the mesa, or are they a response to more distant threats? What was the origin of the communities responsible for the Perry Mesa Tradition? Presumably, population of this period cannot be accounted for solely by natural increase. From where did the migrants come? Were they one "people" when they arrived on the mesa, or was there substantial cultural variation? These are just some of the questions that could be asked about the prehistory of the mesa.

It should be noted at the outset that even badly vandalized sites can produce valuable archeological data. This has been the experience, for example, of the participants in a symposium at the 1991 Annual Meeting of the Society for American Archaeology. The symposium, entitled "Assessing the Research Potential of Large, Damaged Sites in the American Southwest," focussed on three kinds of damage to archeological sites, that caused by vandals (Adams 1991; Ahlstrom et al. 1991), by the development of towns and cities (Bretemitz et al. 1991; Greenwald and Chenault 1991; Scheick 1991), and by the explorations of our archeological forebears (Hohmann 1991; Pilles 1991; Reid and Whittlesey 1991). The closest parallels to the Perry Mesa sites are provided by the Arizona State Museum's recent excavations at the Homol'ovi sites near Winslow, Arizona (Adams 1991; also Hayes et al. 1984). Homol'ovi Pueblos I through IV are built mostly of stone masonry and date from the 1200s to the 1400s. Adams reports that:

the vandalism at the Homol'ovi pueblos is patterned. Masonry structures and cemetery areas have been the most thoroughly damaged; masonry structures because they are the most visible and cemetery areas because they are the most lucrative and are patterned in association with the pueblos. The masonry structures are usually probed. If nothing is found the pothunter usually moves to another structure until something of value is found. This structure is then thoroughly excavated usually leaving the walls and floor features intact, but destroying the floor. Often corners are left undamaged and if a structure does not yield desirable artifacts it may be left alone except for the initial damage. However, with pueblos vandalized over generations the damage is cumulative. Rooms will take several hits and ultimately considerable damage is done to most one-story masonry structures. Invariably, some structures receive little or no damage. These were probably covered over by backdirt piles of early pothunters and never discovered during later episodes.

Nontraditional structures, such as earthen-walled structures or buried structures are frequently missed simply because the pothunters have neither the expertise or patience to locate them. Structures in extramural areas are usually found unless buried.... Other extramural areas are searched for burials, but plaza areas, which are usually filled with features, are little damaged suffering only from random holes. Midden areas are searched for burials, but otherwise deposits are undisturbed by pothunters [Adams 1991:9-10].

Pilles (1991) reports that buried structures were also missed at Elden Pueblo, located outside Flagstaff, Arizona. In this case, the buried structures are pit houses that pre-date but also overlap the occupation of the masonry pueblo and their presence was missed by an archeologist, Jesse Walter Fewkes, who worked at the site in the 1920s. Two concepts are useful for evaluating the research potential of sites on Perry Mesa. The first is the *scale of analysis*, that is, the nature of the units that can be compared appropriately. These scales include the mesa as a whole, a site cluster, or a site. Within a site, one can be concerned with a midden or with strata it contains, with other "off-mound" areas, or with a room block or its component rooms. In the case of middens, one can hope for valid comparison between the middens associated with a room block, even if the deposits within the individual middens have been churned. This is a possible approach, whether the middens have been damaged by vandals, by burrowing animals, or by both destructive agents.

Given the abundance of pueblos on Perry Mesa, it is useful to focus on two of the units just enumerated -- room blocks and rooms. Concern with pueblo structures is an aspect of architectural analysis that is of particular concern in the Southwest (Lowell 1988). Within this realm, there is a useful distinction between *the container and its contents*. This is the second of the two concepts to be considered. "Container" refers to the more or less intact walls and floor of a structure, "contents" to room fill, including artifacts resting on the floor.

To the extent that vandals conduct their digging by room, the container may be preserved while the contents are destroyed. This would be reflected in the kinds of research questions that could be addressed with the data from a site. The container and contents play different, though complementary roles in the interpretation of pueblo construction, use and post-abandonment events. For example, the container typically provides data on construction, on intended use, and, if the structure was remodeled, on subse-

quent use. Relevant data on the container may come from walls, entryways, wall joints (whether bonded or abutted), floor features, room size and so on. On the other hand, room contents, or fill, can be expected to provide evidence of events that occurred after the room was abandoned (for example, Reid and Shimada 1982). The fill may have little bearing, however, on the construction and use of a room. Major exceptions are, first, rooms that contain evidence of two or more stories, second, rooms that burned, preserving portions of the roof, and third, rooms that were abandoned with de facto refuse on the floor. These situations are relatively rare and, therefore, invaluable when they are encountered (see Ahlstrom 1985:296-304 for a discussion of the burning of pueblo rooms).

Four groups of sites are relevant to a discussion of the research potential of sites on Perry Mesa.

(1) Sites of the first group have no surface evidence of structures; examples include rock art sites (Site Type 8) and artifact scatters that may or may not have pit houses (Type 2). Few of these sites have been dug into by vandals. In one case, however, piles of artifacts are present on the site, indicating that surface artifacts have probably been collected. Though not a focus of this study, this kind of damage has doubtless affected many sites on the mesa.

(2) The second group consists of sites with an estimated 1-10 rooms. The majority of these sites are in excellent or good condition; that is, they have suffered little or no damage. Unfortunately, all of our data from controlled excavations on Perry Mesa come from this, the best preserved group of sites with surface architecture (Fiero et al. 1980; Gumerman et al. 1976). As discussed earlier, Fiero et al. (1980:119-120) identify two functional classes of small sites: "field houses" and "outliers." Fortunately, there are numerous undamaged sites on the mesa that could be used to evaluate these two categories of small sites.

(3) Sites of the third group have between 10 and 20 rooms. Their condition varies from excellent to poor. It is difficult to say whether these and other, slightly larger, pueblos on Perry Mesa are contemporaneous with the largest sites, or if they reflect a period of more dispersed settlement prior to aggregation. This is just one of many aspects of Perry Mesa's prehistory that require a better control of chronology. At least for the moment, there are some relatively undisturbed medium-sized sites where these research issues could be pursued.

(4) The final group to be considered is made up of sites with more than 20 rooms. All of the sites in this group

that are included in our sample are in poor condition, that is, are more than 50 percent damaged. In most cases, the evidence of digging covers substantially more than half the site. It is safe to conclude that all sites on Perry Mesa with more than 20 rooms are as severely damaged as the sites in our sample. In other words, any research involving these sites *must* deal with a badly damaged data base. At present, we have no information on these sites from controlled excavations.

Assuming that all of the larger sites on Perry Mesa have been badly damaged by vandals, the question becomes, what do we mean by "badly damaged"? What exactly have the pothunters done to the sites? For example, have the contents been more severely damaged than the containers? Several different styles of pot hunting can be recognized at the larger sites on Perry Mesa. Available evidence indicates that much of the digging has in fact been done room-by-room and, thus, that the "containers" have survived the activities of pothunters. It is worth noting as well that numerous interior doorways can be seen in the exposed walls. It should be possible, therefore, to identify suites of interconnecting rooms. These units could contribute to the interpretation of what has been called the "social use of space" (Lowell 1988).

This question of the condition of walls in the Perry Mesa sites brings to mind the comments of a pothunter in Utah who was interviewed on television. This individual had no qualms about digging through the fill of rooms or in middens, but expressed the opinion that it would be wrong to destroy or damage a structure's walls (W. James Judge, personal communication 1991).

This good news concerning the walls of rooms carries only so far. There are cases, such as the western half of Pueblo La Plata (Appendix C), where it appears that pothunters have blown through the walls. At a smaller scale of damage, we know that pothunters have sometimes tunneled through walls (Appendix D:Figure 9). One strategy is to dig down into the corner of a room, probably until the floor is reached, and then tunnel through the walls into the corners of the three adjacent rooms. In addition, the extent to which pothunters have damaged floors and floor features is unknown. There is evidence that many of the floors are well prepared (Jacka 1980:275), and some pothunters may have recognized these floors as the point at which to stop digging. It is important to note, on the other hand, that burials were clearly a primary goal of the vandals. They would not have stopped at the floors if subfloor burials, or other subfloor finds, were thought to be present. This may have been the case at

Homol'ovi, where, as stated above, the floors are frequently destroyed.

If the news of the containers is a mixture of good and bad, the situation of their contents appears to be mostly bad. A particularly destructive kind of damage is characterized by systematic digging around the four walls of a room and by the presence of a linear pile of backdirt in the center of the room. This pile runs along the room's long axis and, typically, butts against the wall at one end of the room. It is likely that the fill of these rooms has been entirely displaced. This evidence of damage is so distinctive that it can probably be credited to an individual or to a small group of pothunters. It was noted at three of the largest sites on the mesa: Squaw Creek Ruin, ARIZ N:16:45A(PC), and Pueblo Pato. Fortunately, only Mound B at Squaw Creek appears to have been extensively dug in this fashion. The more common style of digging produces more or less circular holes located along walls, in room corners, and in the centers of rooms. Two questions about this "hole punching" are, first, how systematic has it been and, second, how deep has it gone? It is reasonable to hypothesize that deposits have been preserved because they were buried under the backdirt from earlier digging or, better yet, under piles of wall stones. Although individual holes may have vertical sides, this digging, when considered in the aggregate, tends to be conical in section. In other words, the holes get smaller with depth. The larger mounds, particularly those approaching a height of 2 meters, may have sufficient depth for this "digging profile" to have contributed to the preservation of cultural deposits. It is not known if there was any building on earlier remains. As indicated earlier, pit houses underlie Elden Pueblo, and pit houses were used at the same time as masonry rooms at sites in the Verde Valley that are contemporaneous with the Perry Mesa pueblos (Fish and Fish 1977:15).

Some mention should also be made of off-mound areas. Many of the middens associated with the room blocks have been dug into, but most do not appear to have been extensively damaged. In addition, some of the areas surrounding the room blocks have been churned as a result of the search for burials, whereas other areas look relatively undamaged. Given the effort expended by pothunters at the Perry Mesa sites, it is possible that the areas with little evidence of digging have been tested sufficiently to convince the pothunters, at least, that there is little to be gained by digging there. There is some evidence of a shift in recent years from the room blocks to the off-mound areas. It may be that the pothunters have simply not had sufficient time to exploit this portion of the "resource."

In evaluating the effects of vandalism on a site's research potential, it is important to consider the temporal dimension. This is because the damage done by pothunters tends to be obscured with the passage of time. The process of healing may make it difficult to distinguish old damage -- perhaps on the order of a couple decades -- from the "natural" state of collapse. It is hard to believe that rooms in the large sites on Perry Mesa have been entirely missed by the pothunters, but this possibility cannot be rejected on the basis of surface evidence alone.

SITE PROTECTION

Christensen et al. (1988:65) give a comprehensive list of measures that can be taken to protect archeological resources. These measures are as follows:

1. site intervention (signing; fencing; access control; anti-intrusion devices; less obvious project-related marking of sites; and restoration or complete excavation of damaged sites);
2. public involvement (prosocial behavior such as reporting by the public of violations; volunteer programs such as adopt-a-site and site stewardship; and community programs);
3. public education and interpretation (on-site programs; outreach programs; volunteer excavations; media relations; and behavior modification programs);
4. regulatory controls (written orders and closures; action plan implementation; directing use through trail and road location; policy and regulation development; and permittee compliance); steps not mentioned by Christensen et al. include listing of sites or districts on the National Register of Historic Places and designation of Special Interest Areas and Areas of Critical Environmental Concern;
5. law enforcement (investigations, citations and arrests; informants; rewards; patrol techniques; and specialized training);
6. legal controls (alternative sentencing; selective acceptance of cases; court-imposed penalties; administrative settlements; and forfeiture); and
7. other management strategies (inter-agency communication and cooperation; action planning; and modification of existing laws and regulations).

Several steps have been taken in the past to protect archeological sites on Perry Mesa. These efforts fall under four of the categories identified by Christensen

et al. (*repeating the previous numbers*).

1. site intervention: The possibility that the closing of the road to Pueblo Pato has helped to protect the site from damage has already been mentioned. Anti-looting signs, or boards erected to hold those signs, were noted on several sites in Tonto National Forest. The signs were apparently first put up in the 1970s (Chapter 3). All of the sites with signs had been extensively vandalized.

2. public involvement: There has been limited monitoring of Perry Mesa by participants in the Arizona Site Steward Program. Whether this program has contributed to the preservation of sites on Perry Mesa is unclear.

4. regulatory controls: In the 1970s, the three sections of land on Perry Mesa administered by the Bureau of Land Management were listed on the National Register of Historic Places as the "Perry Mesa Archaeological District." Although this area includes sites that are worthy of listing, the use of modern land units and jurisdictions has produced a National Register district with arbitrary boundaries. For example, the site of Pueblo Pato, which is arguably the largest site on Perry Mesa, is located less than a half mile north of the district. In principle, listing on the National Register could serve as an encouragement to the agency that administers a piece of land to protect the archeological sites located there. It is doubtful that the nomination of this area on Perry Mesa has had this effect, if only because, until recently, the Bureau of Land Management has been responsible for only this one, small, isolated piece of the mesa.

More recently, the Bureau of Land Management (1988:Table 2-3, Map 2-17) has proposed that 9,440 acres located on and adjacent to Perry Mesa be designated an Area of Critical Environmental Concern (ACEC). ACECs are "areas containing highly significant historic, cultural, scenic or other natural values" (Bureau of Land Management 1988:2). This plan was implemented in 1991 (William R. Gibson, Bureau of Land Management, personal communication 1991).

Squaw Creek Ruin and the Brooklyn Basin ruins were included on a list of properties proposed for nomination to the National Register by Tonto National Forest between Fiscal Years 1989 and 1992 (Wood et al. 1989:74). In 1990, SWCA, Inc. attempted, unsuccessfully, to obtain matching funds from the Arizona State Historic Preservation Office to prepare a National Register nomination for a Perry Mesa Archeological District. Efforts continue to nominate an archeological district, which would include both the

Squaw Creek and Brooklyn Basin sites.

5. law enforcement: During the governorship of Bruce Babbitt, an abortive attempt was made to locate pothunters on Perry Mesa from the air and to dispatch officers of the Department of Public Safety to arrest these individuals. Also, the Bureau of Land Management tried to interest the Air National Guard in conducting air surveillance of Perry Mesa, without significant success.

RECOMMENDATIONS

Our recommendations can be organized according to Christensen et al.'s (1988:65) list of measures to protect archeological sites.

Site Intervention

Limited excavation should be undertaken at sites on Perry Mesa. This research would have three goals, the relative importance of which would depend to some extent on the source of funding for the work. The first goal would be to increase our understanding of the prehistory of Perry Mesa, in particular with respect to the Perry Mesa Tradition. This study could focus on the exploitation of the mesa by communities that were placed at intervals around its margin. How did these communities utilize the resources of Perry Mesa? How did they interact with one another, both in economic and social terms?

The second goal of excavation would be to provide site areas that could be stabilized and interpreted to the public (as discussed below).

The third goal of excavation would be to answer questions about site condition raised by the Perry Mesa Site Vandalism Study. At present, our inferences about site condition are based primarily on surface evidence. In the light of that evidence, we can make predictions as to the kind and amount of damage that has been done to particular sites, middens and other off-mound areas, room blocks and rooms. These predictions can be related to the data requirements of particular research questions. A logical next step would be to evaluate these ideas through the limited excavation of a sample of the contexts defined by our research.

One strategy for protecting already vandalized sites is to "repair" the damage by stabilizing exposed walls and backfilling holes excavated by pothunters. The hope is that this will remove an encouragement to further digging. Such repair would be a daunting task on Perry Mesa, given the number of vandalized sites

that are present. At a minimum, any sites utilized in an interpretive program should be treated in this way. There is a danger in this approach to site protection that should be avoided. In doing research at vandalized sites, it is important to differentiate disturbed and undisturbed deposits (Adams 1991). Clearly, the latter will provide the best contextual data. Although we know little about the extent of undisturbed deposits in vandalized sites on Perry Mesa, it is safe to say that they should be exploited fully. This means that they should be excavated in accordance with a research design and not simply as a step in stabilization.

Christensen et al. (1988) include fencing as one approach to protecting archeological sites. We would argue that fencing is probably not an appropriate tool for protecting sites on Perry Mesa. Although some sites are particularly impressive -- for example, Squaw Creek Ruin and Pueblo Pato -- the value of the mesa's cultural resources lies primarily in their abundance. That is, the sites are best evaluated not individually but as members of a population. This assessment would be valid in any case, but is accentuated by the extensive vandalism that the sites have suffered. Key information for reconstructing the past may have been destroyed at individual sites, making it necessary to build interpretations on the basis of patterning in less than ideal data from a number of sites. From this perspective, it is difficult to justify the expense of fencing one or a few sites, considering that the resources available for site preservation are, and probably always will be, limited.

It should be noted that most sites on Perry Mesa would need to be enclosed entirely; that is, there are few situations where a relatively short, judiciously placed fence would restrict access to a site. In addition, a fence might attract pothunters to a site by indicating that there was something there worth protecting. Finally, it is possible that fencing one or a few sites would simply encourage looters to dig elsewhere.

In our opinion, the goal of protecting Perry Mesa's archeological resources will best be served by increasing visitation to the mesa. Fencing of sites, particularly the "best" sites, runs counter to this program. If it were decided that increased visitation was undesirable or impractical, then fencing might be a reasonable approach to preservation -- to try to save what is left of a few sites, while the condition of the rest continues to decline.

An important limiting factor in our research on site vulnerability was the lack of survey coverage from the central portion of the mesa. A related problem is the apparently low intensity of coverage in some areas

that have been surveyed. In all probability, most sites on the mesa with 20 or more rooms have been recorded. It is likely, on the other hand, that the majority of sites with fewer than 10 rooms have not been inventoried. Also, many agricultural sites remain to be discovered. Additional areas of the mesa should, therefore, be surveyed, both to enhance studies of prehistoric settlement patterns and to provide managers with better knowledge of the archeological resources that they are attempting to protect. Because there is a more pressing need for information on the distribution of sites rather than on the number of sites present, we recommend a systematic approach to sampling the mesa. In accord with the research orientation presented earlier, we recommend the survey of one or more transects across the mesa. One approach might be to survey one or more lines of alternate quarter-sections, for example extending from Pueblo Pato eastward and from Squaw Creek Ruin northward. A second survey goal would be to increase our knowledge of the major communities on the mesa. To this end, blocks surrounding Squaw Creek Ruin, Pueblo Pato, Pueblo La Plata and ARIZ N:16:45(PC) could be surveyed.

Public Involvement

On-the-ground monitoring by site stewards should be instituted. At present, the only monitoring of the mesa of which we are aware is from the air. Visitation to sites by the stewards could be integrated with an ongoing program of repeat photography. This would have the dual advantage of contributing to the data base for studying vandalism damage and, possibly, of enhancing the appeal to volunteers of the Site Steward Program. With respect to the former concern, additional research is needed on variables such as the rate at which damage by pothunters "heals"; with respect to the latter, it has been observed that retention of site stewards would increase if they were assigned more challenging tasks (Society for American Archaeology 1990:16). Site stewards could be asked to observe changes in existing damage and to periodically match existing photographs of that damage. This might be an appealing task for those interested in contributing to an ongoing research effort. Matching photographs is challenging, in the sense that it entails detailed comparison of an existing picture with what can be seen in a camera's viewfinder. It does not, however, require any special archeological expertise. Arizona site stewards are asked to visit the sites assigned to them approximately once a month. For the purposes of tracking site condition and studying the natural process of weathering and revegetation, it would be appropriate to produce repeat photographs at intervals of one to two years. A sample of sites and photo

stations could be selected from the sites investigated by the Perry Mesa Site Vandalism Study.

Two sites recorded by the Perry Mesa Study, ARIZ N:16:80(PC) and NA 11490, are good candidates for a focused monitoring program. They were observed to have been recently vandalized *and* to have intact deposits.

Efforts to institute on-the-ground inspection of sites, possibly including repeat photography, should be coordinated with the Bureau of Land Management, which has developed a plan for monitoring cultural resources in the Perry Mesa ACEC (Bureau of Land Management 1988:Table 2-8).

Public Education and Interpretation

A modest interpretive program should be developed for Perry Mesa (cf. Wood et al. 1989:62-67). As mentioned above, limited excavation should be conducted to expose portions of one or more sites that could be interpreted to the public. This could be comparable to the initial interpretive effort at the site of Homolo'ovi II in Homolo'ovi State Park near Winslow, Arizona (Adams and Hays 1991). There, a suite of rooms was excavated, stabilized, and incorporated in a signed interpretive trail that winds around the ruin. The purpose of the signs at Pueblo La Plata would be to introduce the visitor to the archeology of the site and, more importantly, of Perry Mesa in general. Who lived on Perry Mesa, and when were they there? What did the ruins that we see today look like when they were occupied? How did the prehistoric inhabitants of Perry Mesa make a living? How does the prehistory of Perry Mesa fit into the story of Native American presence in the Southwest? Along with teaching the visitor about the prehistory of Perry Mesa, the interpretive program would demonstrate the value of the mesa's archeological resources by example. In this way, it would counter the pothunters' argument that "bureaucrats" and "ivory tower academics" want to protect sites only for their own selfish purposes.

Squaw Creek Ruin and Pueblo Pato are probably the two most impressive sites on Perry Mesa -- based both on the archeology and on their picturesque settings at edge of the mesa. They would, on this basis, be excellent candidates for interpretation to the public. Squaw Creek Ruin has, in fact, been identified as one of the properties in Tonto National Forest "having potential for interpretive development as recreation sites" (Wood et al. 1989:48). It should be noted, on the other hand, that both Squaw Creek Ruin and Pueblo Pato are a long way from the Bloody Basin Road. Their locations present two disadvantages -- to make these

sites truly accessible, the roads leading to them would have to be improved and maintained, and visitors would have to travel a considerable distance from Interstate 10 to reach these sites.

Pueblo La Plata has advantages on both of these counts; that is, it is near the point where Bloody Basin Road climbs onto Perry Mesa. It is also an impressive site. There would also be the potential of expanding the interpretive program at Pueblo La Plata. That is, visitors could be directed to one of the small (less than 10 room) sites on the south side of Bloody Basin Road, as well as to ARIZ N:16:28(PC), a site on the rim of Baby Canyon with an apparently defensive wall, rooms, and what appear to be agricultural terraces. Other terrace features are to be found in the area between Baby Canyon and Bloody Basin Road. In other words, visitors could learn about a range of sites with different appearances and different functions in an area only two miles across. Once an interpretive program had been developed and evaluated in the Pueblo La Plata area, an expansion to Squaw Creek Ruin and Pueblo Pato could be considered.

Regulatory Controls

Efforts to nominate sites, districts, or both on Perry Mesa to the National Register of Historic Places should continue. Nomination of an inclusive Perry Mesa Archeological District would reinforce the idea that the mesa is an archeological unit. A single district covering all of Perry Mesa would crosscut the jurisdictions of the Bureau of Land Management and Tonto National Forest, providing a symbolic statement of the need for the two agencies to cooperate in preserving the mesa's archeological resources. If nomination of one large district is not possible, smaller units should be identified. The existing National Register district could be expanded into a West Perry Mesa District including the area along the west front of the mesa from Silver Creek to the south rim of Lousy Canyon. Squaw Creek Ruin could be nominated as a site, and the Brooklyn Basin as a district. These three units would include many of the larger sites on the mesa.

One approach to protecting sites from vandals is to restrict access by closing roads. It has been suggested that the destruction of the road to Pueblo Pato, which apparently occurred in the 1970s, may have helped protect the site from looting. On the other hand, there is abundant evidence that pothunters have experienced little difficulty getting to sites located far from the road. If one is careful, it is possible to drive cross-country to almost any spot on the mesa. ARIZ N:16:80(PC), located a mile from the nearest road, produced evidence of vehicular access in the form of

oil and oil-treatment containers. Restricting access might benefit pothunters, at least the hardier sort, by making their activities and their vehicles harder to detect.

It is clear that, whatever steps may be taken in the near future to protect sites on Perry Mesa, they are not likely to bring a complete halt to pot hunting. Given that the benefits of road closure are uncertain in the Perry Mesa case, perhaps a controlled experiment should be undertaken to test this approach (Society for American Archaeology 1990:9). Two or more sites could be identified that are comparable in size, distance from the road, and current condition. Because baseline data on site condition would be essential, it would make sense to utilize sites that were included in the Perry Mesa Site Vandalism Study. Roads could be closed in the vicinity of some sites, but not others. The condition of the two sets of sites could be monitored over time -- as part of the site-steward monitoring program mentioned above. Even if one were certain that road closure would work on Perry Mesa, it is doubtful that approval could be gained for eliminating many stretches of road. A formal study of the effects of closure, like the one suggested here, would take maximum advantage of whatever closures could be effected.

Law Enforcement

In protecting archeological sites, there is no substitute for the presence of people in authority, particularly ones who can make arrests. The Bureau of Land Management and Forest Service should coordinate efforts to increase patrolling on Perry Mesa. Aerial monitoring could be of value, but only if it could be coordinated with on-the-ground enforcement. This recommendation is simple and critical, but difficult to implement.

Other Management Strategies

The Society for American Archaeology's Taos Conference on looting concluded that "agencies must improve coordination":

Cooperative agreements must be negotiated among federal land managing agencies and between agencies and the states, for protection of archeological resources. Agencies must develop ways to share both personnel and information on adjacent lands (Society for American Archaeology 1990:9).

Protection of archeological sites on Perry Mesa is the shared responsibility of the Bureau of Land Management and Tonto National Forest. The protective

measures recommended here -- for example, limited excavation and stabilization, an interpretive program, increased monitoring by site stewards, and increased patrolling -- would be most effective if instituted by the two agencies jointly.

CONCLUSION

Ideally, preservation efforts of Tonto National Forest and the Bureau of Land Management on Perry Mesa should culminate in a program of increased public

access. This would include interpretive signs and trails, ruins stabilization, patrolling by rangers and, most importantly, an increase in visitation by people who would disapprove of the despoliation of public property and national resources. This recommendation is based on the relative, though not absolute, success of national monuments and parks in protecting archeological sites. It also follows from a conviction that the archeological resources of Perry Mesa deserve and warrant this level of protection and public interpretation.

APPENDIX A

SITE RECORDING GUIDELINES AND FORMS

PERRY MESA SITE VANDALISM STUDY Site Recording Procedure

1. Find site in a reasonable amount of time.
2. Review existing site data.
3. Describe the visibility and accessibility of the site; consider location and rank of roads and tracks; consider visibility from "facilities," such as tanks or windmills.
4. Produce a site map.
5. Make observations, keyed to map, on site damage.
6. Photograph the site, identifying new photo stations on map and, if appropriate, old stations (repeat photography).
7. Make observations on artifacts and other specimens; compare to existing site records.
8. Make general site observations; assess attractiveness of site to pothunters.

Mapping Guidelines

- use standard SWCA scales (1:2, 1:5, 1:10, 1:20)
- emphasize recording "main" site area rather than locating site boundaries
- use "A, B, C, ..." to label major site areas (individual mounds, discrete site areas, etc.); these already exist for some sites
- show mound outlines, rooms, middens, etc.
- record relative and absolute height of different portions of rubble mounds (in lieu of detailed contouring)
- use "1, 2, 3, ..." to label smaller site areas (rooms or roomblocks, areas adjacent to mounds, artifact concentrations, middens, etc.)
- if practical, map individual areas of pothunter damage
- on large or badly vandalized sites, show broad areas of vandalism or identify site areas ("1, 2, 3, ...") and record presence of vandalism in notes
- use "a, b, c, ..." (within a triangle) to label photo stations; record on map (unless located outside mapped area)

Revision No. 1 (6/2/90)

PERRY MESA SITE VANDALISM STUDY
Site Vandalism Record

Site _____; Mound/Area _____ Completed by _____; Date _____

Description:

Type: _____ <10 rms, _____ 10-100 rms, _____ 100+ rms, _____ def., _____ prob. hab., _____ resource, _____ rock art

Comment _____

Access and Visibility (distance to road, kind of road, visible distance, visibility from facilities, indicators, etc.) _____

Character, setting, vegetation, size (length by width), depth, tagged? _____

Vandalism:

Site condition (% dug: _____ rooms, _____ area):

_____ Excell. (0%), _____ Good (<25%), _____ Fair (25-50%), _____ Poor (>50%)

Area/volume damaged _____

Types of damage: _____ Digging, _____ Graffiti, _____ Vehicular, _____ Road, _____ Livestock, _____ Erosion,

_____ Burrows, _____ Beds, _____ Other _____

Prev. record (source, descript.) _____

_____ Old photos, _____ Repeated

Level and source of attractiveness to pothunters _____

Narrative Description of Vandalism/Damage: By Location (Site, Area, Roomblock, Room, Etc.)

Type of digging (location, size, shape, depth)

Recency of digging:

Character of backdirt: angle of repose, sharp edges

Freshness of exposed bone

Plant succession: dirt, grass, shrubs; Condition of buried vegetation

Looter's trash (type, age, condition)

Things out of place (collector's piles, bone, sifted backdirt, damaged/moved architecture, etc.

Damage to signs; Evidence of camping; Type of graffiti

Revision No. 1 (6/2/90)

[illegible]

Site _____; Mound/Area _____ Completed by _____; Date _____

Ground Stone _____

Flaked Stone

Ceramics

Other (including Human Remains) _____

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are no margins, text, or other markings on the page.

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Appendix B

Perry Mesa Database Description

CONTROL_NU	Sequential numbers assigned to sites for this study
SITE_NU	Identification numbers assigned by various institutions
SITE_UNIT	Mound identification
LAND_STAT	Land ownership status: T = Tonto National Forest, A = Arizona State Land Department, B = Bureau of Land Management
T1-T18	Site types see text for description
TYPE_1	Primary site type
TYPE_2	Secondary site type
SIZE_CLASS	Size class categories: 0 = 0 rooms, 01 = 1-9 rooms, 02 = 10-19 rooms, etc.
P2-QUESTION	Occupation date: see text for description
OPENVSC	Site setting: 0 = cave, 1 = open
EXCAVATED	0 = no, 1 = yes
IN_SAMPLE	Study sample: 1 = in sample, 0 = not in sample
EASTING	Easting in UTM coordinate system
NORTHING	Northing in UTM coordinate system, minus 3,200,000 to conform to State lands UTM coordinate system.
CONDITION	Site condition as recorded in the field
CERAMICS	
	HOPI Hopi Yellow Ware
	SALADO Salado Polychrome
	WHITE White Ware
	WHITE_MT White Mountain Redware
	ANY Any of the above
	CERAMICS Quantity of ceramics
LITHIC	Quantity of lithics
SIZE	Mound size in square meters

APPENDIX C

SITE DISCUSSIONS

INTRODUCTION

Most of the sites described here have numbers, and a few have names. Three sites are listed below by name: Squaw Creek Ruin, Pueblo Pato, and Pueblo La Plata; the rest are listed according to their site number (or letter).

Four different systems for designating sites are represented: (1) "AR" numbers used by Tonto National Forest, (2) "NA" numbers of the Museum of Northern Arizona, (3) "ARIZ N:16" numbers in the "PC," or Prescott College series, which were assigned by the Central Arizona Ecotone Project, and (4) letters (A, B, C, etc.) used as field designations by the Perry Mesa Site Vandalism Study (PMSVS). In the case of sites with "AR" numbers, this system has been given priority over the others in determining a "primary" site number. For sites with both "NA" and "ARIZ N:16(PC)" numbers, neither system has consistently been given priority over the other.

Five additional systems for identifying sites are represented in the listing of Alternative Numbers/Names that appears in the individual site descriptions: (5) "ARIZ N:16" numbers in the "ASM," or Arizona State Museum, series, (6) "ARIZ N:16" numbers in the "MNA," or Museum of Northern Arizona, series, (7) "ARIZ N:16" numbers in the "BLM," or Bureau of Land Management, series, (8) "ARIZ O:13" numbers in the "ASU," or Arizona State University, series, and (9) "AR" numbers assigned by the Bureau of Land Management.

This plethora of alternative site numbers is one reason for retaining the "PMSVS" field designations rather than assigning official numbers to the sites involved - the question being, which system or systems should be used? In addition, most of the sites given PMSVS letters were recorded in cursory fashion and should probably be revisited before being given official numbers.

The sites fall into three major groups: those in the stratified sample of sites that were relocated; those in the stratified sample of sites that could not be found; and sites that were not included in the sample, but that were visited and recorded in cursory fashion. Table 29 summarizes information on the first and third groups of sites. Within the three groups, the sites are described in the following order: those being referred to by name, by "AR" number, by "NA" number, by "ARIZ N:16(PC)" number, and by "PMSVS" letter. The second group of sites, those in the stratified sample that could not be found, requires some explanation. In several cases, some combination of map plots, de-

scriptions, and photographs indicated that SWCA archeologists were in the location of a previously recorded site. For one reason or another, however, the site as *recorded* could not be identified at that location. In other instances, a site could not be found at the location plotted on the map, but neither descriptions nor photos were available to strengthen the argument that this mapped location was in fact correct. These cases present a problem in interpretation, given that we located several sites on Perry Mesa up to several hundred meters from their location as shown on the map.

Several of the categories of data provided for each site require some explanation. Two items are, in most cases, taken directly from tabulations provided by Tonto National Forest in the RFP -- "mound size" (room count only) and "date of occupation." In many cases, the category "mound size" also includes a measurement in square meters (rounded to tens of meters). Usually, the area of the mound could be measured on our site map directly. In some instances, however, our map shows the outlines of rooms but not of the mound per se. For these mounds, a "minimum estimate" is provided. This value is based on the observation that, in practically all cases where both the structural outline and the mound outline were mapped, the mound area is *at least* 20 percent greater than the structure area. With respect to the category "condition," it is almost invariably the case that a site categorized as in "poor" condition (>50 percent dug) has been more than 75 percent dug.

The "comments" section focuses on evidence of vandalism at a site. Where pertinent, other data relating to visitation are mentioned. A systematic accounting of beverage can data appears in the body of the report (Chapter 6). Finally, portions of sites are sometimes referred to by number. These numbers were assigned in a single series as needed to refer to individual rooms, blocks of rooms, middens, areas adjacent to a mound, and so forth.

SITES IN SAMPLE: RELOCATED

Squaw Creek Ruin and Site AR-03-12-01-54

Site AR-03-12-01-54

Alternate No./Name:	Squaw Creek Ruin (in part)
Site Type(s):	18, probable habitation (pit house ?)
Date of Occupation:	Period 2 (pre-A.D. 1150)
Land Ownership:	Tonto National Forest
Condition:	see "Comments", below

Squaw Creek Ruin

Alternate No./Name: AR-03-12-01-55; Las Mujeres

Site Type(s): 1, residential (≥ 10 rooms)

Mound Size: Mound A = 85 rooms; 3420 m² (minimum estimate)
Mound B = 25 rooms; 910m²
Mound C1 = 15-20 rooms; 720m²
Mounds C2 and C3 = 5+ rooms; 280 m² (minimum estimate)
Mound D = 10 rooms; 200 m²

Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)

Land Ownership: Tonto National Forest

Condition: Mound A: poor (>50 percent dug)
Mound B: poor (>50 percent dug)
Mound C1: poor (>50 percent dug)
Mounds C2 and C3: fair (25-50 percent dug)
Mound D: good (<25 percent dug)
Locus E: excellent (none dug)

Comments: Squaw Creek Ruin is a large site located on, and back from, the north rim of the canyon overlooking Squaw Creek (Figures 1 and 11). A "loop" jeep trail leads directly to the site, which has been recorded as including a number of spatially discrete mounds (Figures 12 through 15). In addition, Site AR-03-12-01-54 has been recorded as a separate site within the bounds of Squaw Creek Ruin (Figures 11 and 16). AR-54 has been identified as a different site because it pre-dates the occupation of the various mounds that make up Squaw Creek Ruin. Although the temporal distinction between these two sites is apparently valid, it is also the case that the sites overlap spatially. The area identified as AR-54 incorporates a variety of features, including a rock-ringed roasting pit (R1), several middens that may cover roasting pits (M2 through M5), a large depression that may be man-made (D6), three small structures (S7, B8, and B10), and a large rock pile that may be from land clearance (RP9) (Figures 11 and 16). The dating of sites was not a goal of the PMSVS, and therefore, data that might allow the assignment of these features to one temporal period or another and, hence, to one site or the other, were not collected. For this reason, the two sites are treated together.

The features in the area of AR-54 (Nos. 1 through 10) that were just described appear to be in excellent condition, that is, not vandalized. Several of the middens do, however, show evidence of recent burrowing by animals.

Mound A, the largest component of Squaw Creek Ruin, is at the edge of the mesa, overlooking Squaw Creek (Figure 12). Mapping of visible walls suggests that Mound A includes slightly more than 100 ground-floor rooms. Several circular structures built of dry-laid masonry and measuring a couple meters across have been built on the western portion of the mound; these constructions are presumably historic. Similar rooms were noted at ARIZ N:16:96(PC). The mound is separated from the body of the mesa by an outer wall. Outside this wall there is a long linear feature of a kind found at several sites on Perry Mesa and known popularly as a "race track." Surface evidence suggests that all rooms on Mound A have been dug at least in part and that most rooms have been dug thoroughly. Holes of varying sizes, shapes, and depths are everywhere, as are piles of rubble. As discussed in the body of the report, the most useful record of this damage collected by the PMSVS consists of numerous photographs taken at various locations around the mound. In addition, Figure 12 shows wall segments that have been exposed by pot hunting, as well as individual holes that have been dug recently.

Perhaps because Mound A has been turned over so thoroughly, it is difficult to identify different periods of digging. In many areas, the pothunters have "blown through" walls, making it difficult to identify individual rooms. In other cases, the digging follows the walls. In a few instances, vandals have tunneled through a wall. Over most of the mound, backdirt is recognizable, though it is somewhat obscured. There has been considerable revegetation of this portion of the mound, by grasses and by shrubs like shadscale and saltbush. This evidence would suggest that most of the digging on Mound A is not recent, but occurred more than five or so years ago. No doubt the damage was done over a period of years.

At least one wall has been exposed for considerably longer than five years, as indicated by the presence of lichen on the wall stones over a horizontal distance of three meters and a vertical distance of half a meter. It is conceivable that this wall was exposed in the original collapse of the pueblo.

There is also some evidence of recent digging on Mound A; about ten holes could be distinguished. The holes in question, which appear on the map (Figure 12), have vertical walls and dirt clinging to the newly uncovered wall stones. Revegetation of holes and backdirt piles appears to be limited to some grass. This physical evidence indicates that digging occurred within the last couple years, probably within the last year or less. In fact, it took place between May 1989

Table 29. Summary of Site Characteristics.

SITE No./ NAME	SITE UNIT	LAND ADMIN	PRIM. TYPE	2 ND TYPE	SIZE CLASS	P2	P3	P4	PH	H	?	CONDITION	PAINTED SHERDS	POT CLASS	MOUND SIZE
Squaw Cr	Mound A	T	1	8	11	0	1	1	0	0	0	Poor	1	5	3420
Squaw Cr	Mound B	T	1	8	9							Poor			910
Squaw Cr	Mound C	T	1	1	3							Poor			1000
Squaw Cr	Mound D	T	1	1	2							Good			200
Pueblo Pato		B	1	8	11	0	1	1	0	0	0	Poor	1	5	
Pueblo Pato	Mound A	B	1	1	2							Good			690
Pueblo Pato	Mound B	B	1	1	5							Poor			1300
Pueblo Pato	Mound C	B	1	8	7							Poor			1990
Pueblo Pato	Mound D	B	1	1	3							Poor			710
Pueblo Pato	Mound E	B	1	1	1							Good			430
Pueblo Pato	Mound F	B	1	1	1							Fair			260
Pueblo Pato	Mound G	B	1	1	1							Good			660
P. La Plata		B	1	1	11	0	1	1	0	0	0	Poor	1	5	2820
AR-01-31		T	1	1	4	0	0	1	0	0	0	Poor	1	5	1310
AR-01-32		T	1	1	2	0	0	1	0	0	0	Poor	1	5	780
AR-01-37		T	1/11	8	1	0	0	1	0	0	0	Good	1	4	190
AR-01-39		T	1/11	1/11	1	0	0	1	0	0	0	Good	1	5	12
AR-01-44		T	1	1	5	0	0	1	0	0	0	Poor	1	5	1490
AR-01-54		T	18	18	0	1	0	0	0	0	0	Excellent	0	5	
NA11414		B	1/11	1/11	1	0	1	1	0	0	0	Excellent	0	4	80
NA11415		B	8	8	0	0	0	0	0	0	1	Excellent	0	0	
NA11418		B	1	1	2	0	1	1	0	0	0	Excellent	0		
NA11439		B	1	1	6	0	0	1	0	0	0	Poor	1	5	1840
NA11490		B	1	8	6	0	0	1	0	0	0	Poor		5	
NA11647		B	1/11	8	1	0	0	0	0	0	0	Excellent	0		
NA11682		B	1	1	2	0	1	1	0	0	0	Fair	1	4	80
NA11687		B	1/11	1/11	1	0	1	1	0	0	0	Poor	0	3	60
NA11785		B	1	1	2	0	1	1	0	0	0	Poor	1	5	470
NA11792		B	1	1	5	0	0	1	0	0	0	Poor	1	5	610
NA11793		B	1/11	1/11	1	0	0	1	0	0	0	Poor	1	4	40
NA13295		B	1	1	2	0	1	1	0	0	0	Poor	0	4	280
NA13304		B	18	18	0	1	0	0	0	0	0	Excellent	1	5	
NA13314		B	1/11	1/11	1	0	1	1	0	0	0	Poor	0	3	50
NA13316		B	18	18	0	0	0	0	0	0	1	Excellent	1	5	
NA13319		B	1/11	1/11	1	0	1	1	0	0	0	Excellent	1	2	50
NA13328		B	2	2	0	0	0	0	0	0	0	Excellent	0	2	
NA13330		B	2	8	0	0	1	1	0	0	0	Excellent	0	3	
NA13338		B	8	8	0	0	0	0	0	0	1	Excellent	0	1	
NA13346		B	1/11	1/11	1	0	1	1	0	0	0	Excellent	0		
NA13350		B	7	7	0	0	1	0	0	0	1	Excellent	0	2	

N:16:9	B	18	18	0	1	0	0	0	0	1	Excellent	0	1	Excellent	0	1	40
N:16:11	B	1/11	1/11	1	0	1	1	0	0	0	Excellent	0	3	Excellent	0	3	40
N:16:12	B	1	1	2	0	1	1	0	0	0	Good	1	5	Good	1	5	900
N:16:16	B	1	1	2	0	1	1	0	0	0	Good	1	5	Good	1	5	220
N:16:17	B	1	1	2	0	1	1	0	0	0	Fair	0	5	Fair	0	5	100
N:16:26	B	1/11	8	1	0	1	1	0	0	0	Poor	0	4	Poor	0	4	120
N:16:28	B	1	7	2	0	1	1	0	0	0	Poor	1	4	Poor	1	4	130
N:16:40	B	1/11	1/11	1	0	1	1	0	0	0	Excellent	1	4	Excellent	1	4	330
N:16:44	B	1	1	2	0	1	1	0	0	0	Good	1	5	Good	1	5	2640
N:16:45	B	1	7	10	0	1	1	0	0	0	Poor	1	5	Poor	1	5	20
N:16:53	B	1/11	1/11	1	0	1	1	0	0	0	Excellent	0	0	Excellent	0	0	1360
N:16:54	B	1	1	2	0	1	1	0	0	0	Excellent	0	1	Excellent	0	1	
N:16:80	B	1	1	7	0	0	1	0	0	0	Poor	1	5	Poor	1	5	
N:16:90	B	1/11	1/11	1	0	1	1	0	0	0	Poor	0	0	Poor	0	0	
N:16:96	B	1	1	4	0	0	1	0	0	0	Poor	0	0	Poor	0	0	
N:16:101	B	1/11	1/11	1	0	1	1	0	0	0	Excellent	0	1	Excellent	0	1	20
N:16:111	T	1/11	2	1	0	0	0	0	0	1	Excellent	1	3	Excellent	1	3	270
N:16:120	B	1	1	2	0	1	1	0	0	0	Fair	1	5	Fair	1	5	
N:16:121	B	2	2	0	0	0	0	0	0	1	Excellent	0	0	Excellent	0	0	
Site A	B	1/11	1/11	1	0	1	1	0	0	0	Excellent	1	0	Excellent	1	0	
Site C	B	2	8	0	0	0	0	0	0	1	Fair	0	0	Fair	0	0	
Site D	B	2	2	0	0	0	0	0	0	1	Fair	0	0	Fair	0	0	
Site E	B	1/11	1/11	1	0	0	0	0	0	1	Excellent	0	0	Excellent	0	0	
Site F	B	1/11	1	1	0	1	1	0	0	0	Good	0	4	Good	0	4	
Site G	B	1/11	1/11	1	0	1	1	0	0	0	Excellent	0	0	Excellent	0	0	
Site H	B	1/11	1/11	1	0	1	1	0	0	0	Excellent	0	0	Excellent	0	0	

Land Admin:	T	Tonto National Forest	Size	0	0 Rooms	Painted	0	Absent
	B	Bureau of Land Management	Class:	1	1-9 Rooms	Ceramics:	1	Present
				2	10-19 Rooms			
				10	90-99 Rooms			
				11	100+ Rooms			

Site Type:	1	Residential	Pottery	0	None
	1/11	Residential/Temporary Residence	Class:	1	1-25 sherds
	7	Defensive		2	26-50 sherds
	8	Communication (Rock Art)		3	51-100 sherds
	18	Probable Habitation (Pit House)		4	101-500 sherds
				5	501+ sherds

Mound Size:	In square meters
	Period: P2 Pre-A.D. 1150
	P3 A.D. 1150 - 1300
	P4 A.D. 1300 - 1400
	PH ca. A.D. 1500 - 1850
	H Post A.D. 1850

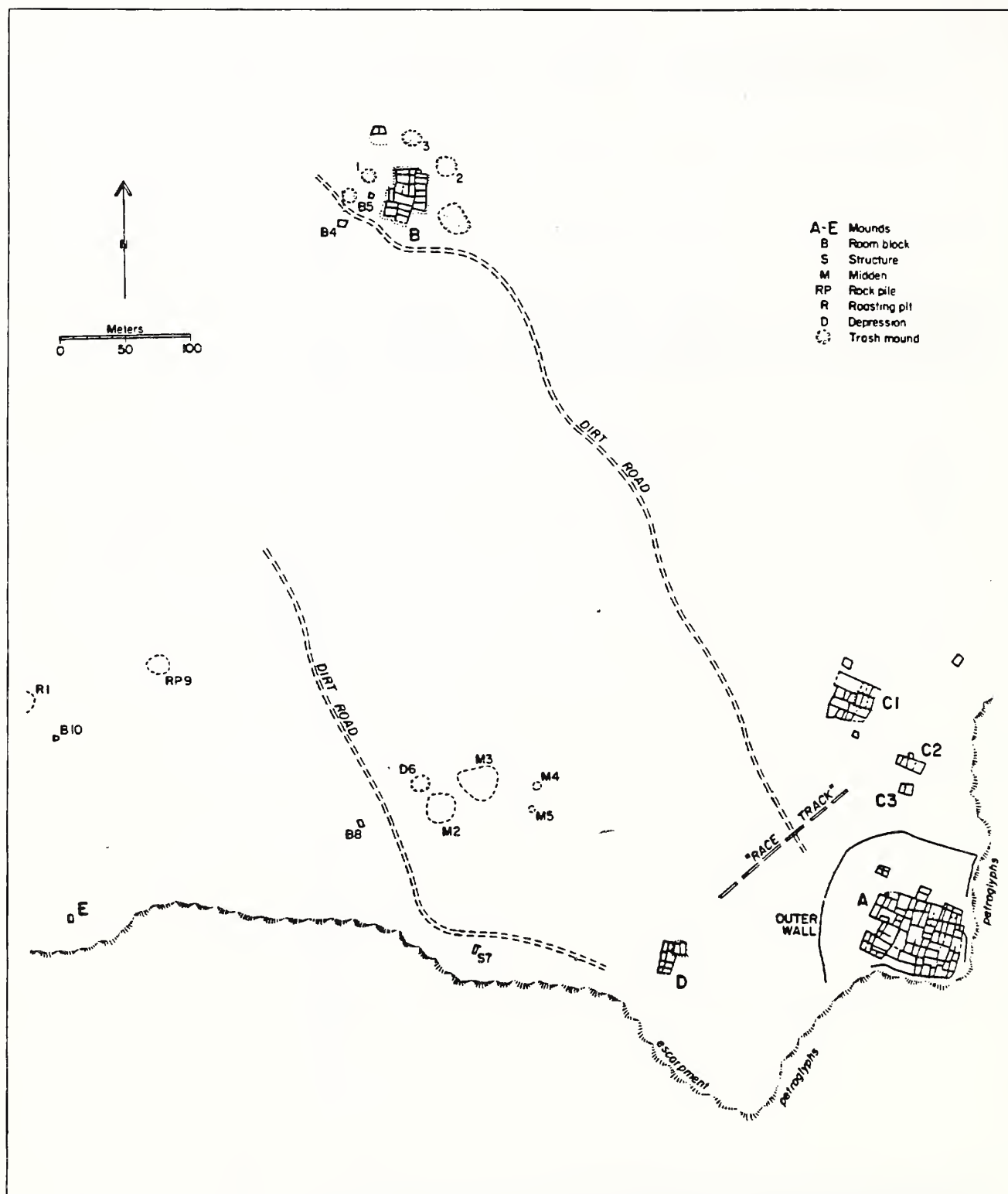


Figure 11. Overall map of Squaw Creek Ruin (AR-03-12-01-55) and site AR-03-12-01-54.

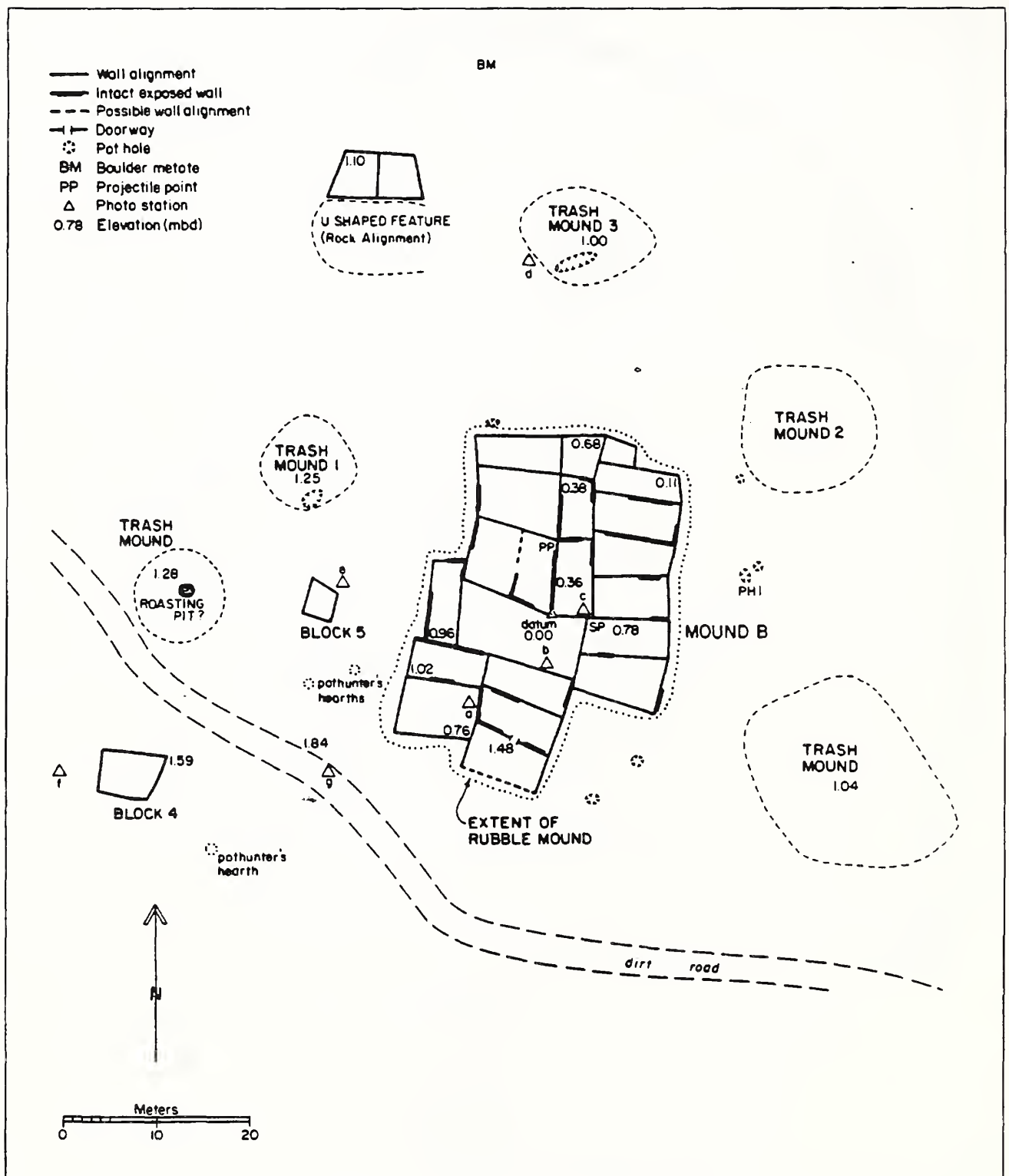


Figure 13. Map of Mound B, Squaw Creek Ruin.

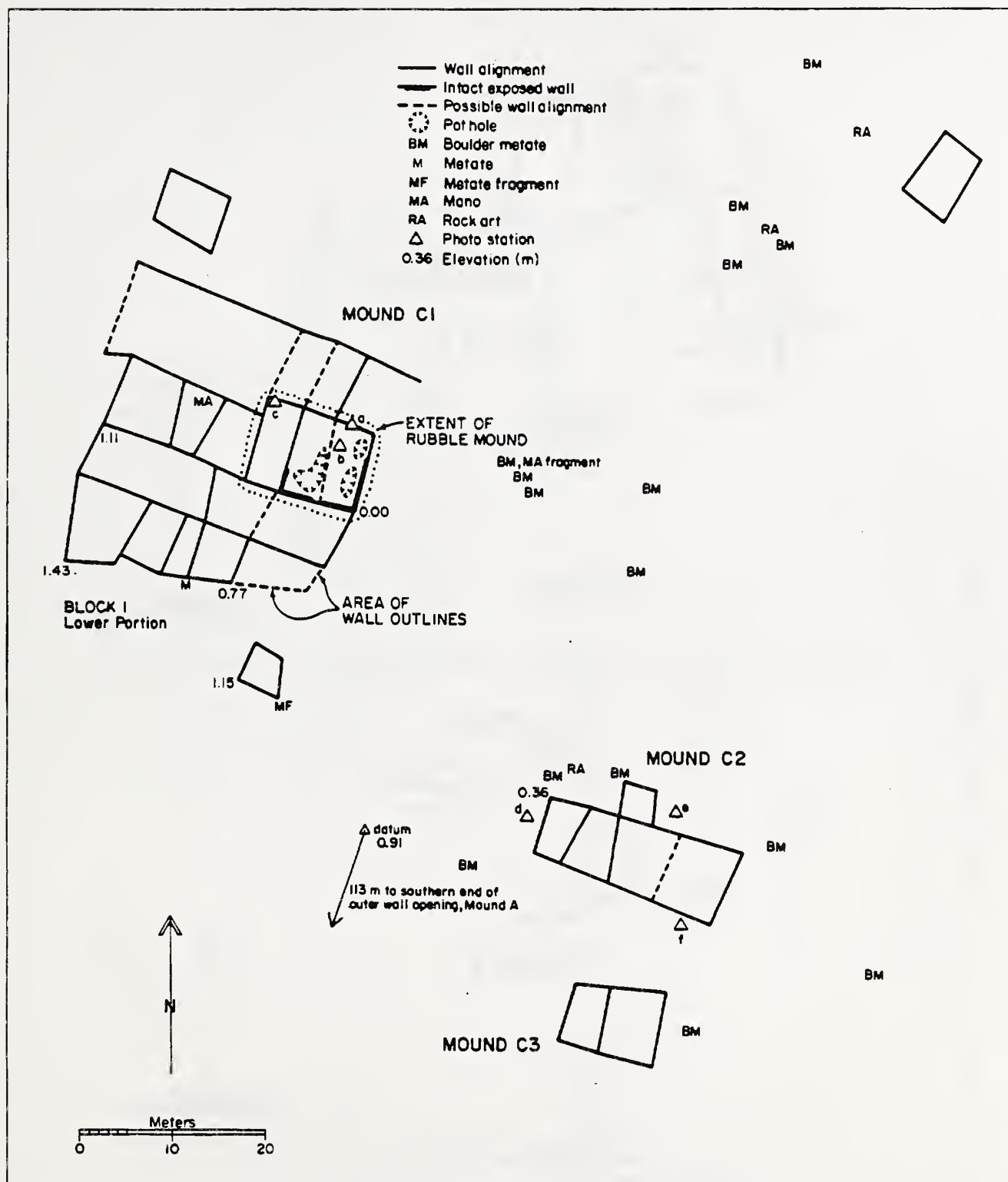


Figure 14. Map of Area C (Mounds C1, C2 and C3), Squaw Creek Ruin.

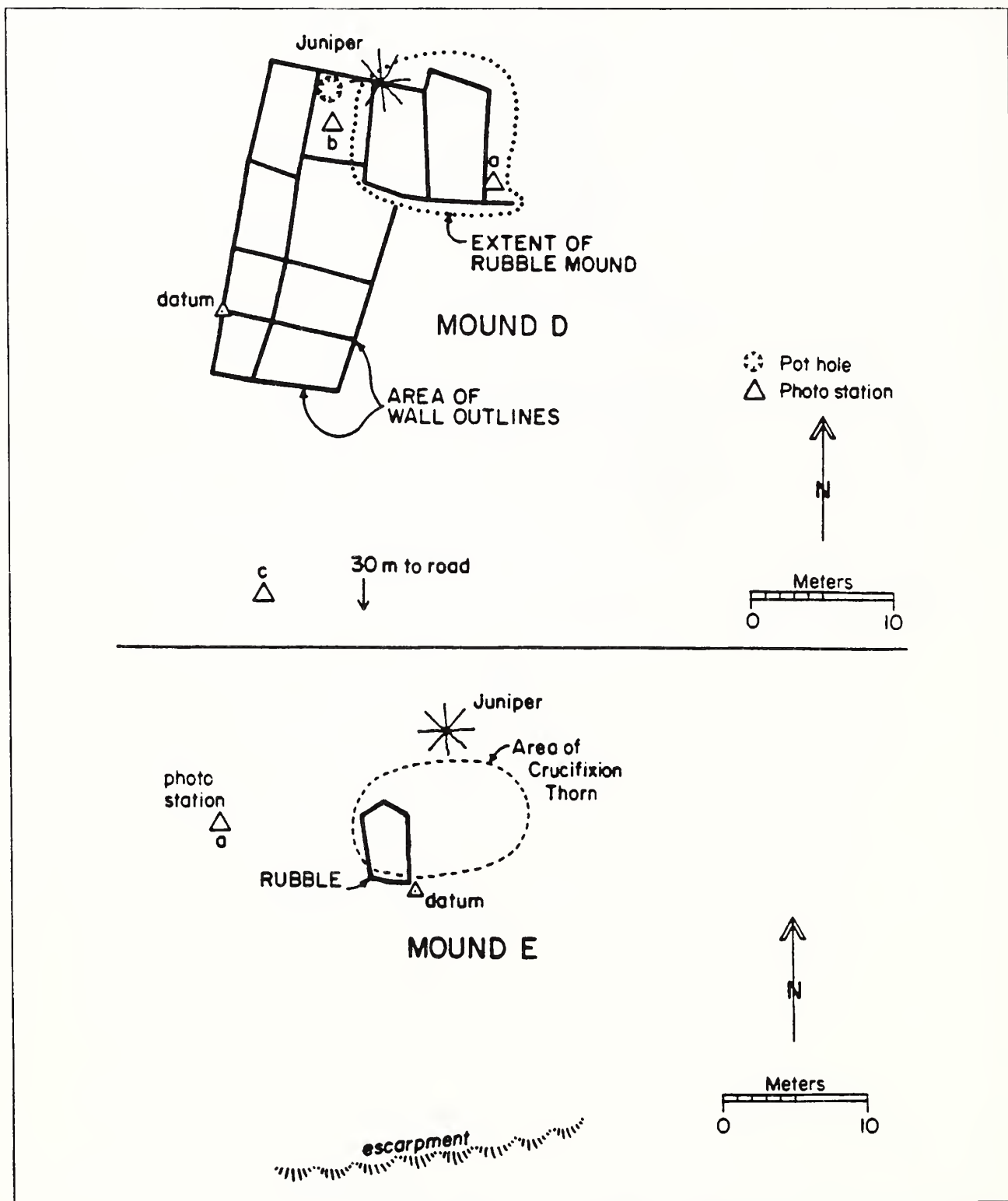


Figure 15. Maps of Mounds D and E, Squaw Creek Ruin.

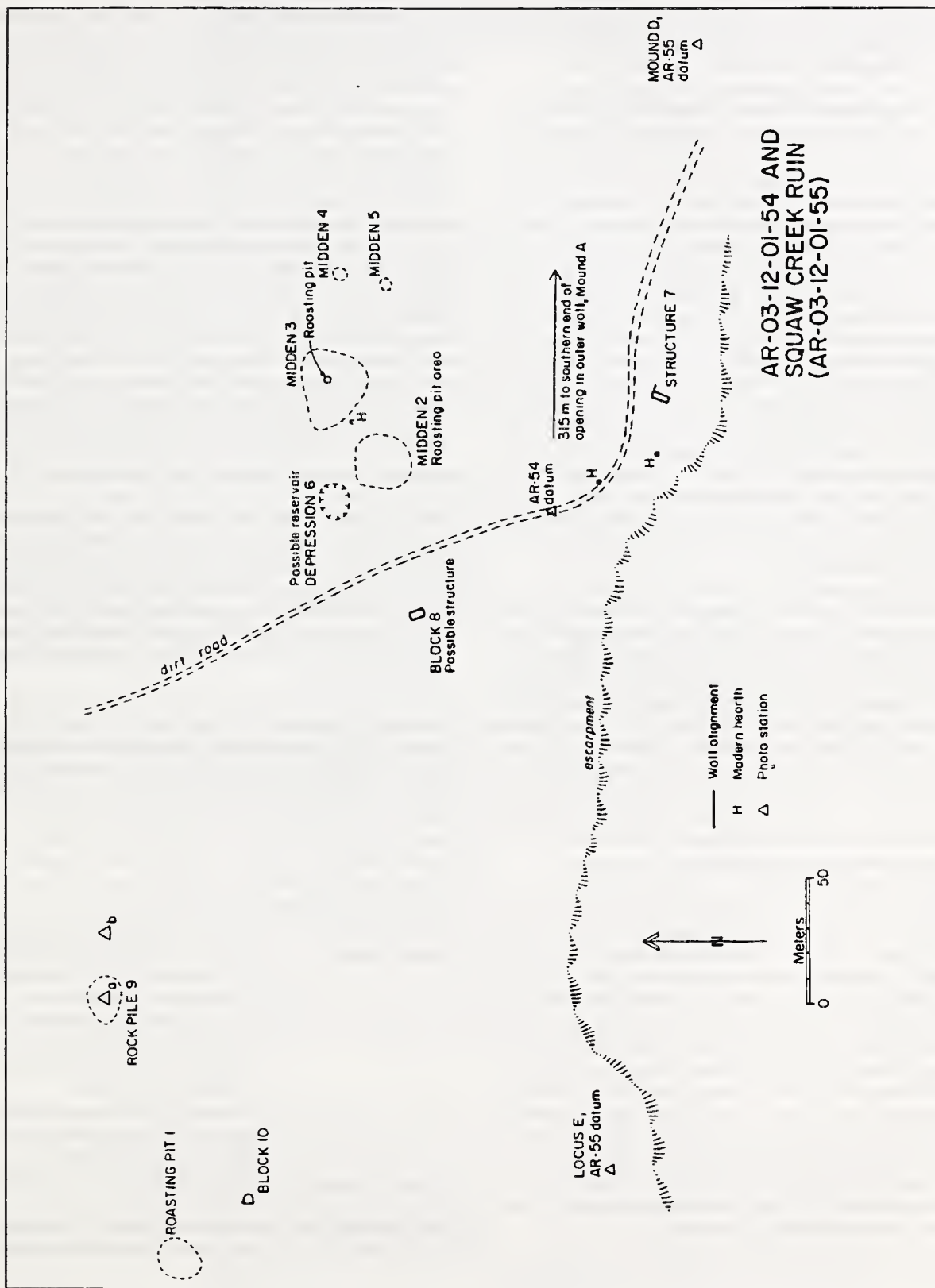


Figure 16. Map of site AR-03-12-01-54 and adjacent portion of Squaw Creek Ruin (AR-03-12-01-55).

and January 1990, that is, between six and 13 months before the site was recorded by the PMSVS (Scott Wood, personal communication 1990).

Mound B is several hundred meters north of Mound A (Figure 13). It incorporates about 25-30 first-story rooms, is about two meters in height, and has five distinct trash mounds around it. The mounds tend to be about a half meter in height and to consist of dark sediment; the mounds incorporate numbers of small rocks, and artifacts, though present, are not abundant. Every room in the mound appears to have been thoroughly excavated. In general, the rooms have been trenched around the walls, and there is a pile of backdirt, often capped with rubble, running down the long axis of the room. Typically, this pile butts against the wall at one end of the room. This pattern of digging is distinctive and occurs in a few rooms at other sites examined on Perry Mesa. In all probability, it reflects the activity of an individual or a small group: Backdirt is recognizable between the rooms, though the material has eroded down from the tops and, for the most part, from the sides of rocks. This degree of erosion indicates that at least several years have passed since the site was vandalized.

No evidence of recent digging (in the last couple years) was noted. Potted rooms and backdirt piles are revegetated primarily with grasses and snakeweed but also with saltbush and catclaw acacia. According to Scott Wood, Tonto National Forest Archeologist (personal communication 1990), Mound B has been burned over by the Forest Service. This would explain the sparseness of the vegetation on Mound B, relative both to that on other mounds of comparable size examined by the PMSVS and to the age one would infer for the pot hunting damage on the basis of the erosion of holes and backdirt piles.

The trash middens around Mound B have also been vandalized. At least one mound has been dug extensively (Mound 1), one mound has been trenched (Mound 3), and another appears untouched (Mound 2). The remaining mounds contain a few small holes. In all, less than 50 percent of the trash mounds has been disturbed. As in the case of the mound, the digging does not look recent: the sides of the holes are at low angles, and there has been some revegetation, though less than on the mound. There has also been some digging around Mound B, between the trash mounds. One hole in particular looks recent (PH1)--the sides are at angles greater than 45 degrees, and though a 3-foot saltbush is growing in the bottom of the hole, this is a fast-growing species.

Mounds C1, C2, and C3 are relatively small outliers to

the north of Mound A (Figures 11 and 14). C1 consists of an actual mound, Block 2, and a lower area of wall alignments, Block 1. In the case of Block 1, definite evidence of pot hunting is hard to identify, though there are some shallow depressions that are probably the remains of holes. Block 2, on the other hand, has obviously been dug more or less completely. There appear to be two periods of vandalism, an earlier period during which the rooms in general were dug out and a more recent period when smaller holes were dug in several of the rooms (Figure 14). In the case of the more recent digging, the holes are revegetated with grasses, snakeweed, prickly pear, and catclaw, and associated backdirt is fairly distinct and only partially revegetated. This evidence indicates that the damage was done several years ago. C2 and C3 are low mounds incorporating several rooms each. As in the case of Block 1 of Mound C1, there are a few shallow depressions and rock-free areas that are probably the resulting of illegal digging, but the evidence of this activity has been obscured by the passage of time.

Like Mound C1, Mound D consists of a small raised area and of a larger, low area of wall alignments (Figure 15). Considering Mound D's proximity to Mound A, it is remarkable that this component of Squaw Creek Ruin is apparently only slightly damaged. There is just one distinct pothunter hole, though it seems likely that other portions of Mound D have been hit as well.

Assuming that Mound E was identified properly, this portion of the site consists simply of a small concentration of rubble. The locus appears undamaged by humans, though it has been badly trampled by livestock.

Pueblo Pato

Alternate No/Name:	NA 11434
Site Type(s):	1, residential (≥ 10 rooms)
Mound Size:	Mound A = 10-12 rooms; 690 m ² Mound B = 40 rooms; 1300 m ² (minimum estimate) Mound C = 65-70 rooms; 1990 m ² (minimum estimate) Mound D = 20 rooms; 710 m ² (minimum estimate) Mound E = 5-10 rooms; 430 m ² Mound F = 5+ rooms; 260 m ² Mound G = ?; 660 m ²
Date of Occupation:	Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership:	Bureau of Land Management
Condition:	Mound A: good (<25 percent dug)

Mound B: poor (>50percent dug)
 Mound C: poor (>50 percent dug)
 Mound D: poor (>50 percent dug)
 Mound E: good (<25 percent dug)
 Mound F: fair (25-50 percent dug)
 Mound G: good (<25 percent dug)

Comments: Pueblo Pato consists of a number of mounds of varying size scattered over an area several hundred meters across (Figures 17 through 23). This cluster of mounds, which is located on the north rim of Perry Tank Canyon, makes up what is probably the largest site on Perry Mesa. In the past, a road led directly to the site (Figure 17). A segment of this road that passes under the APS powerlines was destroyed, presumably soon after construction of the powerlines was completed in the early 1970s.

Mound A is a low, relatively small mound incorporating 10 to 15 rooms and located at the west end of the site (Figure 18). The room block appears to be on a slight natural rise, and therefore, cultural deposits are probably shallow. There is little recent evidence of vandalism. Some rooms, including one in the northeast corner of the mound, have bare dirt in the middle; this could indicate digging in the past, or simply trampling by livestock.

Mound B is the second largest mound on the site (Figures 17 and 19); it includes approximately 40 ground-floor rooms, and there is a trash mound near each of the corners. It appears that all, or nearly all, of the rooms have been pot hunted. Figure 19 shows the wall segments that have been exposed by this activity, as well as a few of the more distinct holes. Most of the damage is not recent; although backdirt is recognizable, it is considerably weathered, and there has been much revegetation. Of particular interest is Room 2, which has been trenched around the walls and has a backdirt pile inside running down the long axis of the room. This pattern of damage is the same as that present throughout Mound B at Squaw Creek Ruin and also in Room 8 of Area B at Ariz. N:16:45(A). There is, in addition, one room that has been recently vandalized.

Room 1 has a fresh hole in the southwest corner, with dirt clinging to the recently exposed wall stones. A few sprigs of grass are growing on the backdirt, which is slightly eroded--this growth probably occurred the preceding spring. The walls in the southwest corner of the room have been tunneled through to gain access to the corners of the adjacent three rooms. Trash

Midden 8 has been extensively dug, possibly as an extension of digging adjacent to Mound B rather than from the digging of the trash midden per se. The other trash mounds have been damaged to varying degrees, though all probably retain intact deposits. In addition to the mounds, Areas 5 and 6, on the north side of Mound B, have been dug into, though not recently.

Mound C, which includes about 60 first-story rooms, is the largest of Pueblo Pato's mounds (Figures 17 and 20). As in the case of Mound B, most of the rooms have probably been dug, at least in part. Some of this digging is quite old. The mound is two meters and more in height, and, for that reason alone, it is likely that some of the deeper deposits have been missed by the pothunters. Three periods of digging -- with considerable overlap -- could be identified in Mound C and the outlier, Room Block 4. Rooms assigned to Period IV, the oldest digging, tend to be in the center of the mound. Rooms are marked by depressions surrounded by rubble that forms approximate wall alignments. Backdirt is not recognizable. These rooms are thickly revegetated, primarily with shrubs. Period III rooms resemble those of Period IV, except that revegetation consists primarily of grasses. It is possible that the distinction between Periods III and IV relates to growing conditions rather than to time. Period II rooms are characterized by abundant, well-defined holes. Backdirt is apparent, and the holes and backdirt piles are revegetated primarily with grass. This digging occurred a few years ago. Period I was reserved for the most recent digging, that indicated by steep-sided holes and fresh-looking, bare holes and backdirt piles. No digging of this kind was recognized in Mound C.

Midden 3, located north of the mound, has no distinct pothunter holes, though its surface looks somewhat disturbed. There are many pothunter holes in Area 1, to the southeast of Mound C. They vary in size from one meter across and 20 cm deep to two-and-a-half meters across and 40 cm deep. Around the holes are numerous sherds and lithics, no doubt exposed in the churning of a midden deposit. The holes and eroded backdirt piles are sparsely revegetated with grass, snakeweed, and prickly pear. There has also been some digging in Area 2, north of the mound.

Mound D, located a few tens of meters northwest of Mound C, incorporates around 20 ground-floor rooms. As in the case of Mounds B and C, all of the rooms appear to have been dug, at least in part. The same periods of digging -- Periods IV through II, with overlaps -- could be recognized in Mound D as in Mound C. Also as in the case of Mound C, no recent, Period I,

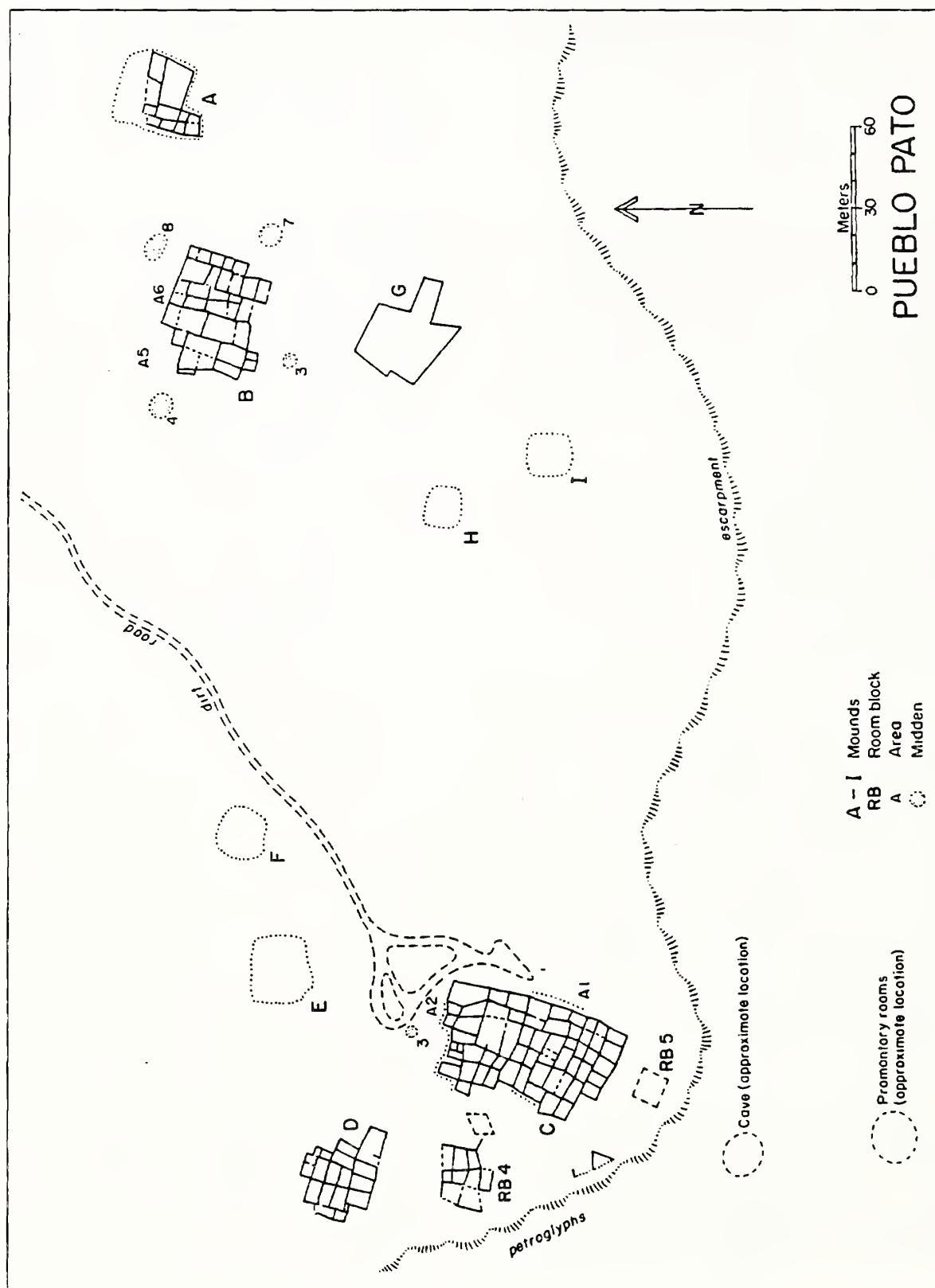


Figure 17. Overall map of Pueblo Pato (NA 11434).

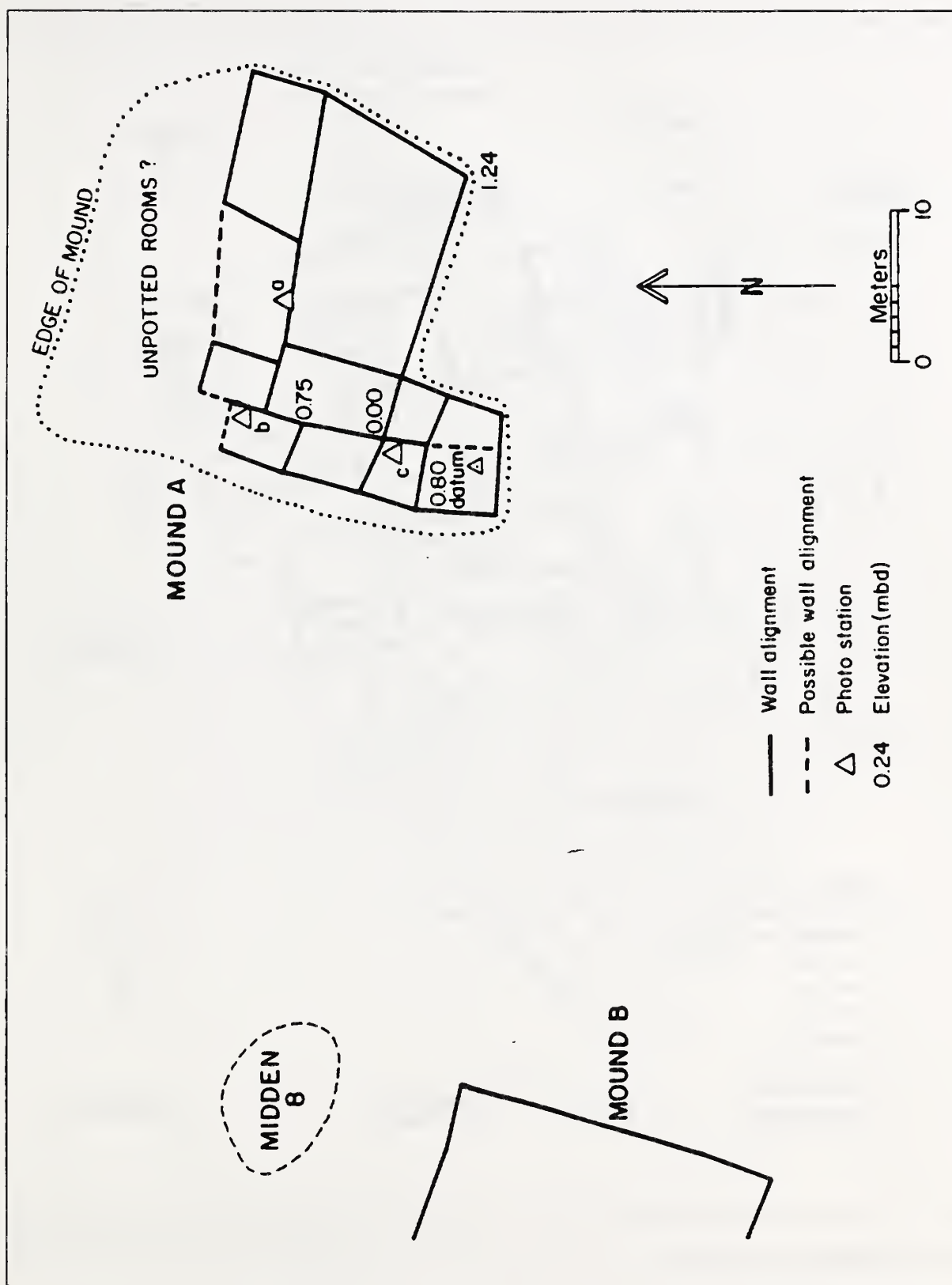


Figure 18. Map of Mound A, Pueblo Pato.

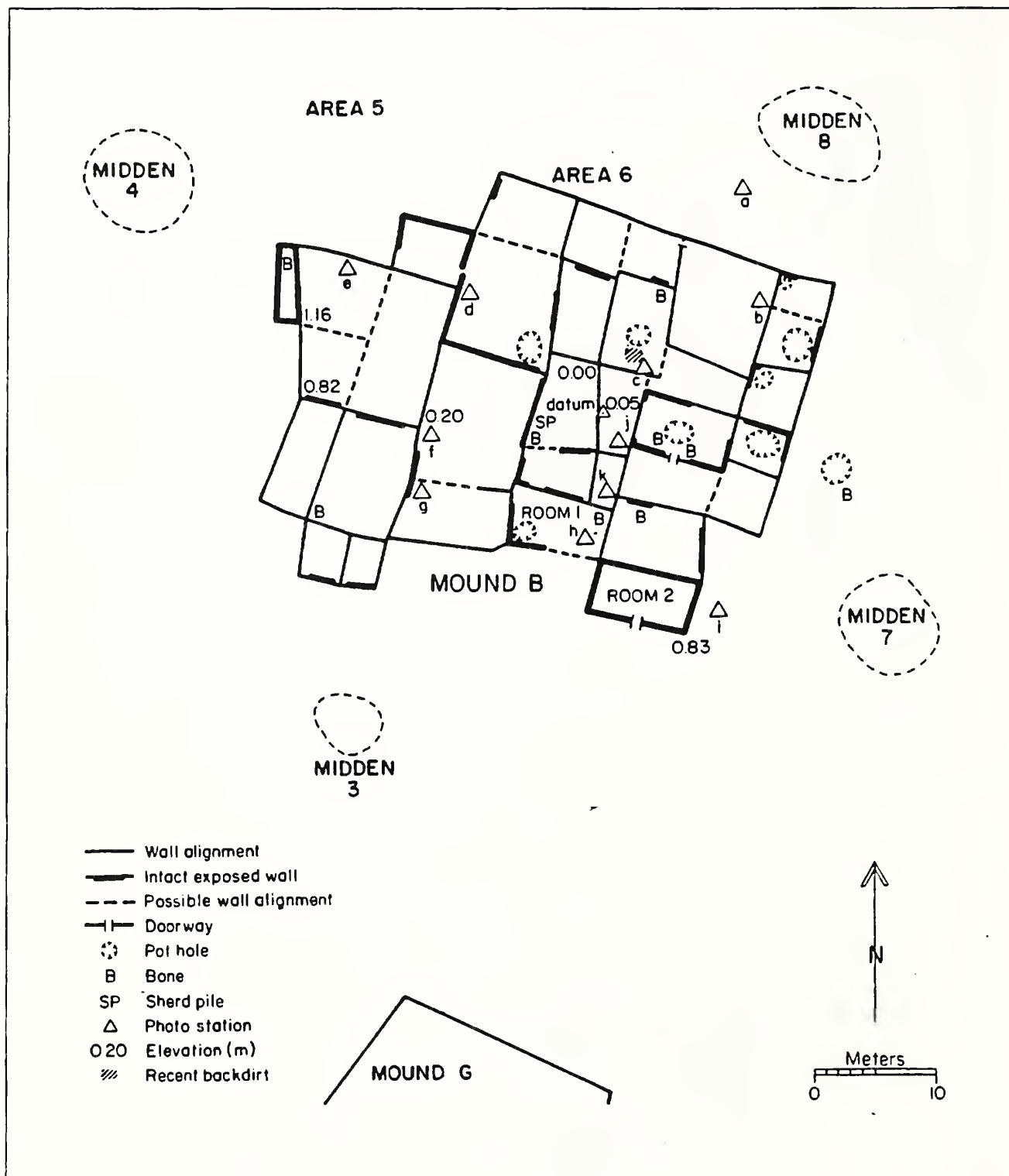


Figure 19 Map of Mound B, Pueblo Pato.

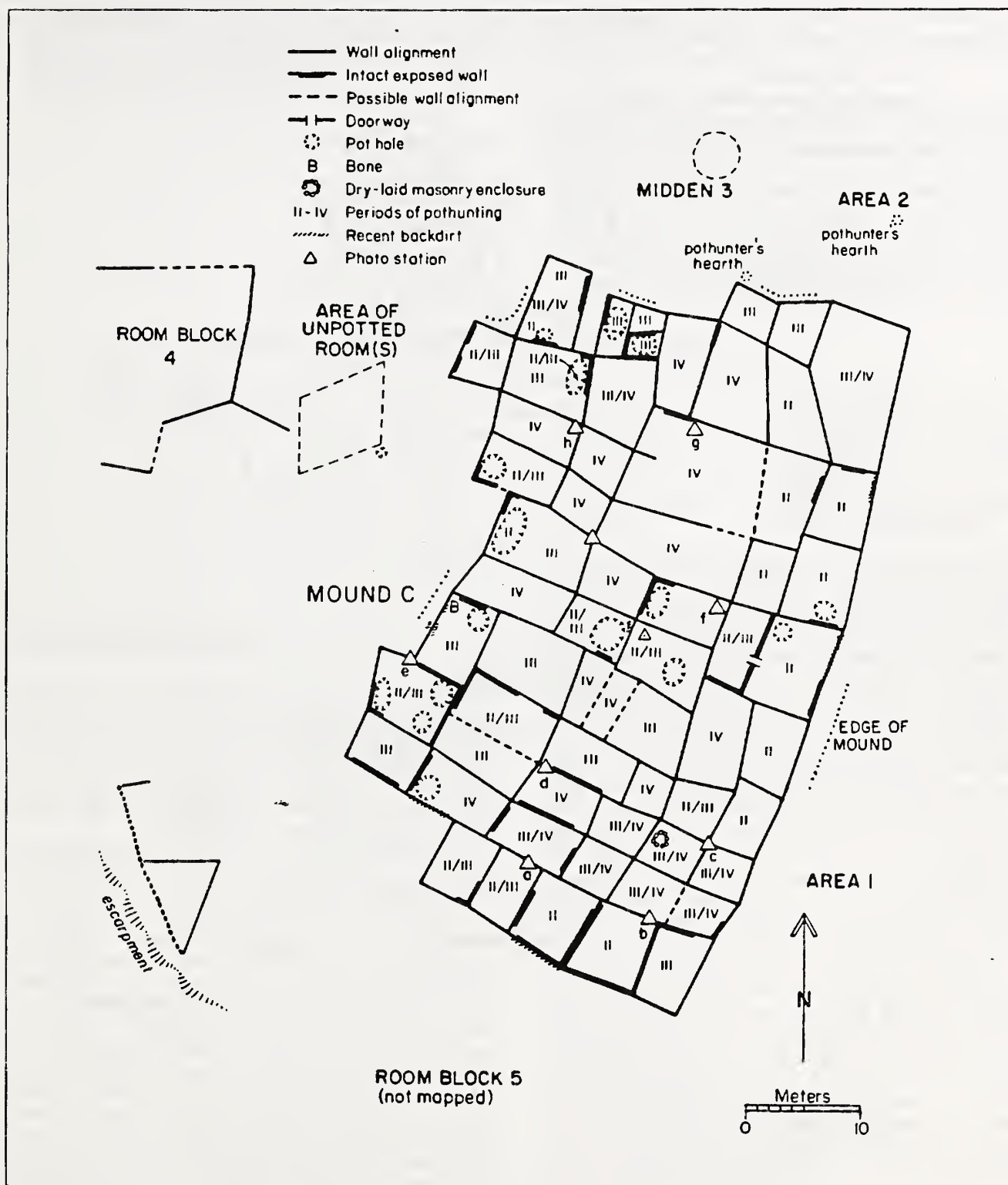


Figure 20. Map of Mound C, Pueblo Pato.

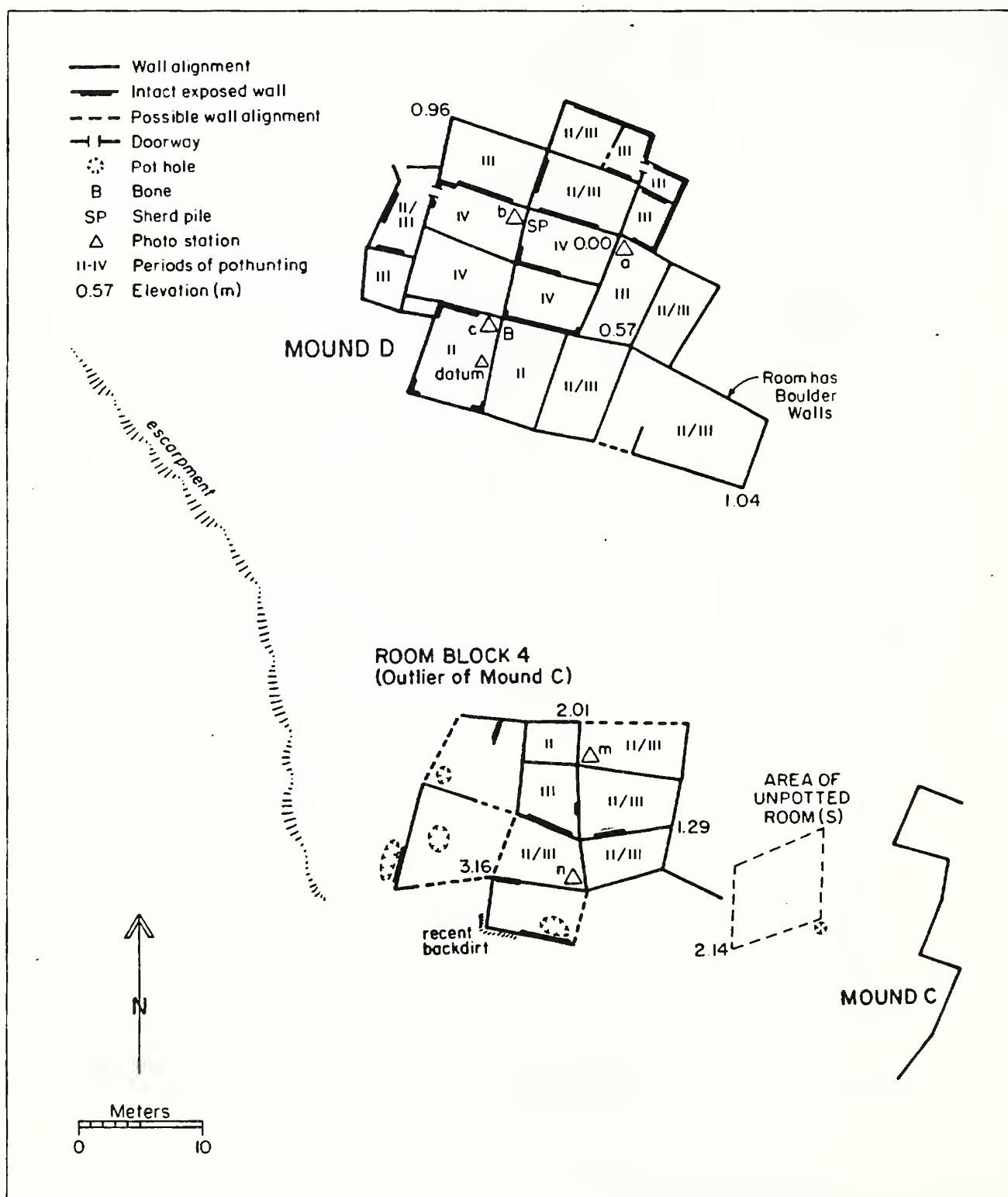


Figure 21. Map of Mound D and Room Block 4 (Outlier of Mound C), Pueblo Pato.

digging was identified.

Mound E and F, perhaps better referred to as room blocks, incorporate six to 10 rooms each (Figures 17 and 22). Mound F has one shallow hole; otherwise, dirt exposures within some rooms suggest digging, but

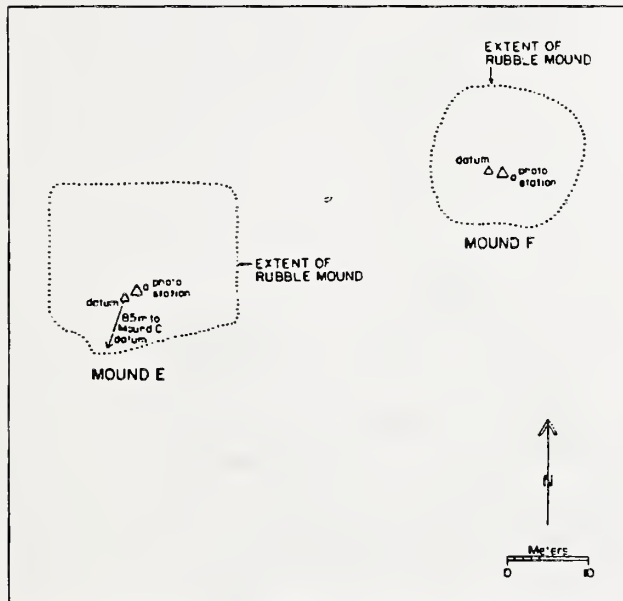


Figure 22. Map of Mounds E and F, Pueblo Pato. There are no obvious holes.

Mound G, which covers a fairly large area, is characterized by wall alignments and rubble scatters, but no distinct room outlines. Possibly the area was robbed of wall stones prehistorically, or rooms may never have been completed there. Except for a few small holes, there is no evidence of damage by pothunters.

In the cliff to the southwest of Mound C, there is a small cave about 5 meters wide, 3 meters deep, and 2 meters high. Portions of the roof appear smoke blackened. Whatever loose fill was once in this cave has been almost entirely removed. Human bone on a backdirt pile a few meters to the side of the cave mouth may have come from the cave. A small petroglyph of a stick figure was noted on the cliff a few meters east of the cave. The figure has been scratched in the rock and is probably recent. It is located next to a path that leads down to this area from the mesa top. A small point extends out from the mesa at the level of the cave. A wall may have extended across the neck of this point prehistorically; all that remains of this wall is a segment a couple meters in length and a few stones high located to one side of the main access to the point. On the point there is a small structure of perhaps two rooms. This building has been vandalized, though the

damage appears minor. The lack of revegetation of the hole and backdirt indicates that the digging occurred fairly recently.

Considering the extensive damage to the larger mounds of Pueblo Pato, it is noteworthy that some of the smaller mounds appear largely untouched. To some extent, the appearance of good condition could be misleading; that is, old damage to these mounds may have gone unrecognized, especially considering the shallow depth of deposits and, hence, of likely potting. Nevertheless, the small mounds do appear to have escaped extensive digging, perhaps because the nearby larger mounds were so much more attractive.

Pueblo La Plata

Alternate No./Name:	None known
Site Type(s):	1, residential (≥ 10 rooms)
Mound Size:	2820 m ²
Date of Occupation:	Period 3/4 (A.D. 1150-1300/ 1300-1400)
Land Ownership:	Bureau of Land Management
Condition:	Poor (> 50 percent dug)

Comments: Pueblo La Plata is a large mound located 100-200 meters south of the canyon through which Silver Creek flows (Figure 1). The mound, which is more than 2 meters high, can be seen from the Bloody Basin Road, one-and-a-half kilometers to the south. A jeep trail leads from that road to the site. Figure 24 is a map of Pueblo La Plata that includes several kinds of evidence that are especially pertinent to a discussion of site condition. All, or practically all, rooms in the site have been at least partially excavated. The best data on the damage is in the form of photographs taken of the site from the stations indicated on the map. In addition, the map shows wall segments scattered about the site that can be depicted with confidence because they have been exposed by this digging. It also depicts areas of the mound that are badly "blown out," in the sense that digging has gone through and destroyed the walls. This kind of damage is particularly abundant along the north side of the mound. It was not possible to distinguish periods of excavation on the mound, though no doubt the digging occurred over a period of time. In general, the damaged areas are grown over with a thick covering of grass, shrubs, or both. Backdirt has washed down off of the rubble piles, but is still recognizable in many areas of the site. There are a few areas of fresher looking -- because less revegetated -- backdirt, in the southern extension of the mound near Photo Station S and in the southeast corner near Photo Station k.

There has been considerable digging around the

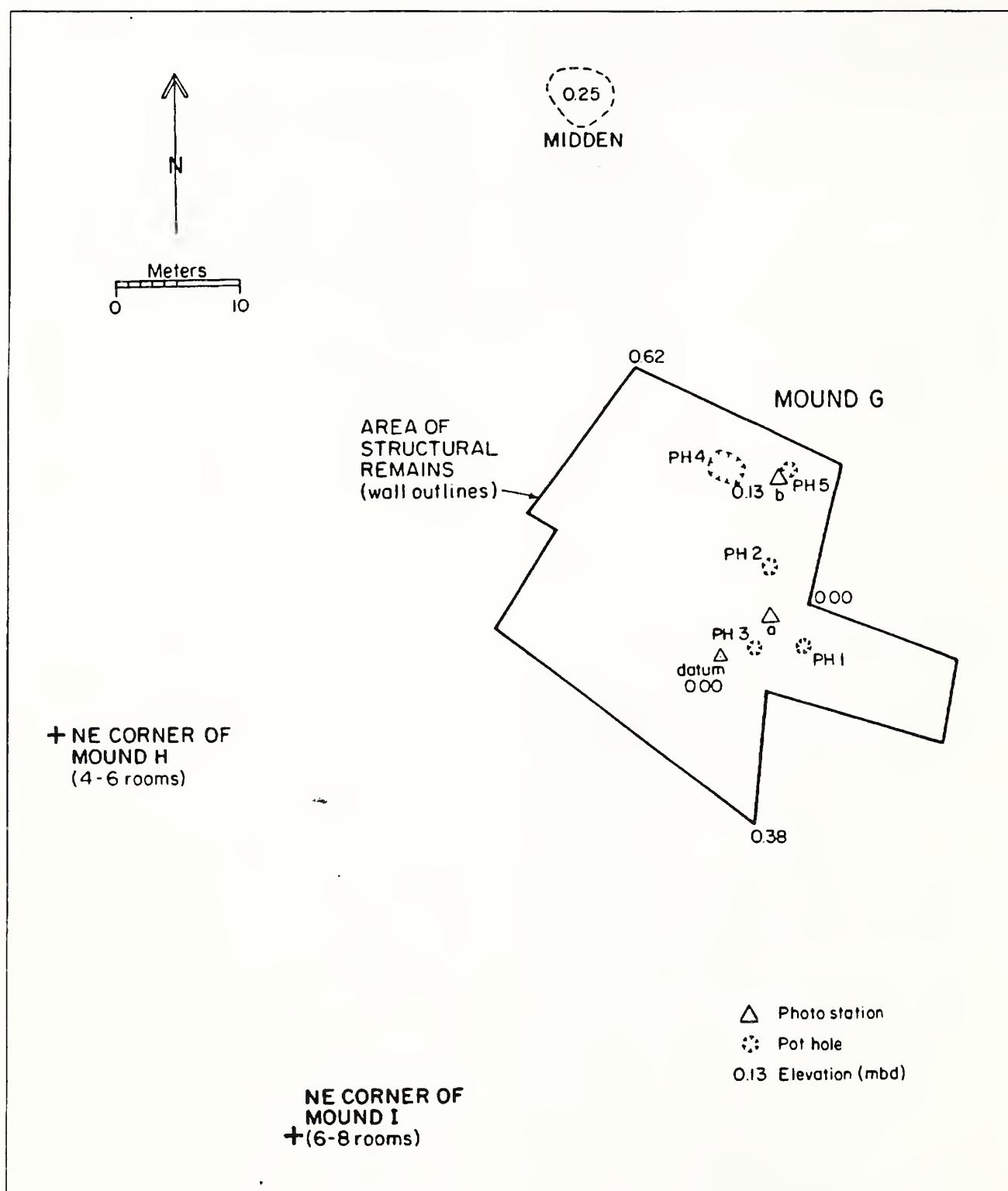


Figure 23. Map of Mound G, Pueblo Pato.

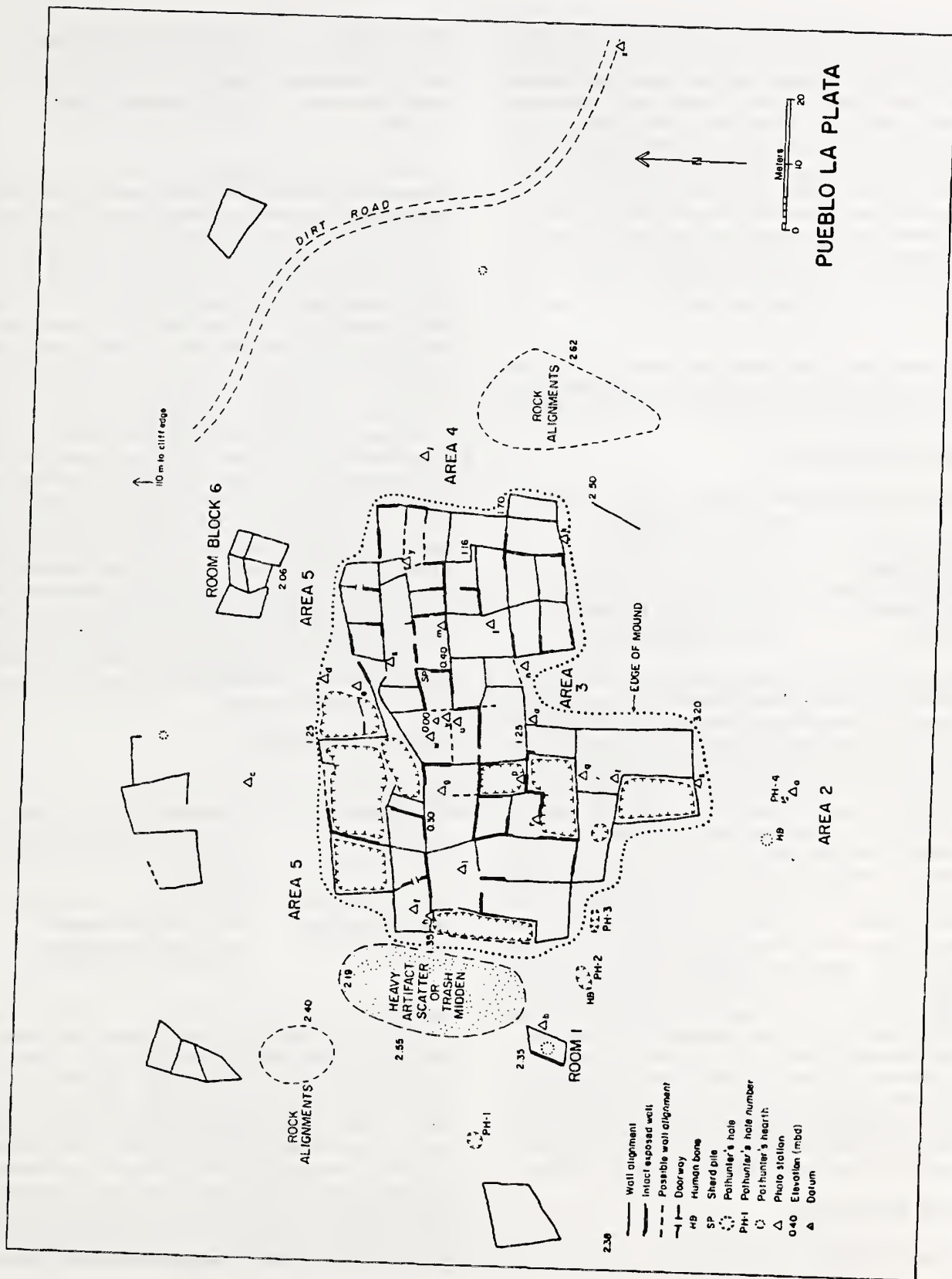


Figure 24. Map of Pueblo La Plata

mound, particularly in Areas 2, 4, and 5. Most of the holes and backdirt piles have eroded in and been at least partly revegetated -- in other words, the damage looks more than a couple of years old. (Weathered human bone is, however, associated with some of these "older" holes, possibly indicating digging within the last five or six years.) The most abundant evidence of recent digging is in Area 2. The best case is Pothunter Hole 4, which is 0.6 to 0.8 meter across and 0.6 meter deep and which has walls that are vertical and slightly undercut on the bottom. The associated backdirt is loose, though it has been rained on. In all probability, the hole had been dug since the preceding winter.

Several hearths on the north side of the mound and a scattering of trash on and around the mound point to recent visitation to and camping at Pueblo La Plata.

Site AR-03-12-01-31

Alternate No./Name: NA 10065, ARIZ O:13:6(ASM),
ARIZ O:13:19(MNA)
Site Type(s): 1, residential (≥ 10 rooms)
Mound Size: 32+ rooms; 1310 m²
Date of Occupation: Period 4 (A.D. 1300-1400)
Land Status: Tonto National Forest
Condition: poor (>50 percent dug)

Comments: AR-31 consists of a compact mound and a surrounding artifact scatter/trash area (Figure 25). It is located on an east-west trending ridge at the point where the eastern edge of Perry Mesa merges with the foothills of the New River Mountains. A good dirt road passes within a few meters of the mound, and the site is, therefore, readily accessible. The site was recorded in 1955 (ASM Site Card) as in "fair" condition. In 1968, it was recorded as "pothunted." As of the summer of 1990, it appeared that all, or nearly all, of the rooms had been dug, at least partially. Some rooms appear to have been dug fairly recently: one room, for example, has a hole in it that has been revegetated, somewhat sparsely, with grasses and small shrubs. In other cases, the digging occurred longer ago: one room, for example, has been dug, but the fill inside has almost leveled off, and there is catclaw acacia growing on it, along with a thick covering of grass and small shrubs. There has obviously been some digging in the area outside the mound, though much of the evidence has been obscured by erosion. A similar site, AR-32, is located on the same ridge, several hundred meters to the east of AR-31.

Site AR-03-12-01-32

Alternate No./Name: NA 10022

Site Type(s): 1, residential (≥ 10 rooms)
Mound Size: 32+ rooms; 780 m²
Date of Occupation: Period 4 (A.D. 1300-1400)
Land Ownership: Tonto National Forest
Condition: poor (>50 percent dug)

Comments: AR-32 consists of a compact mound and a surrounding artifact scatter/trash area (Figure 26); it is located on the same east-west trending ridge as AR-31. A good dirt road passes about 20 meters south of the mound, making the site readily accessible. AR-32 was recorded in 1968 as having "a bit of potting but mostly untouched" (MNA Site Card). As of 1990, it is likely that as many as 90 percent of the rooms have been dug, at least partially. Most of the digging does not appear to be very recent, however, and it is possible that the extent of damage has been overestimated. At least two rooms have been pothunted more recently, as indicated by the presence of a hole in a corner of one room and by the presence of bare, unvegetated earth within and backdirt outside the other room. A number of pothunter holes have been dug in the area around the mound, including one shallow (0.3 meter), recent hole that has been revegetated by annuals only and that is accompanied by small pieces of weathered, but solid, human bone. An antiquities sign posted next to the mound by the Forest Service has been shot several times. Other evidence of recent visitation includes firepits, trash, a plastic shotgun-shell wad, pieces of clay pigeon, and a piece of plywood with shot holes.

Site AR-03-12-01-37

Alternate No./Name: NA 10066
Site Type(s): 1, residential (≥ 10 rooms)
8, communication (rock art)
Mound Size: 4-5 rooms; 190 m²(minimum estimate)
Date of Occupation: Period 4 (A.D. 1300-1400)
Land Ownership: Tonto National Forest
Condition: Good (<25 percent dug) to fair (25-50 percent dug)

Comments: AR-37 is located on a low rise and bedrock outcrop near the eastern edge of Perry Mesa, about 50 meters from a good dirt road. The site consists of a low rubble mound that, from the road, is hard to distinguish from the outcrop (Figure 27). In 1968, the site's condition was "very good" (MNA Site Card). It's condition as of the summer of 1990 is hard to assess. On the one hand, there are no obvious pothunter holes. On the other, two lines of evidence suggest that there may have been digging: there is little vegetation within two of the rooms, and we were unable to match a photo taken of one of these rooms

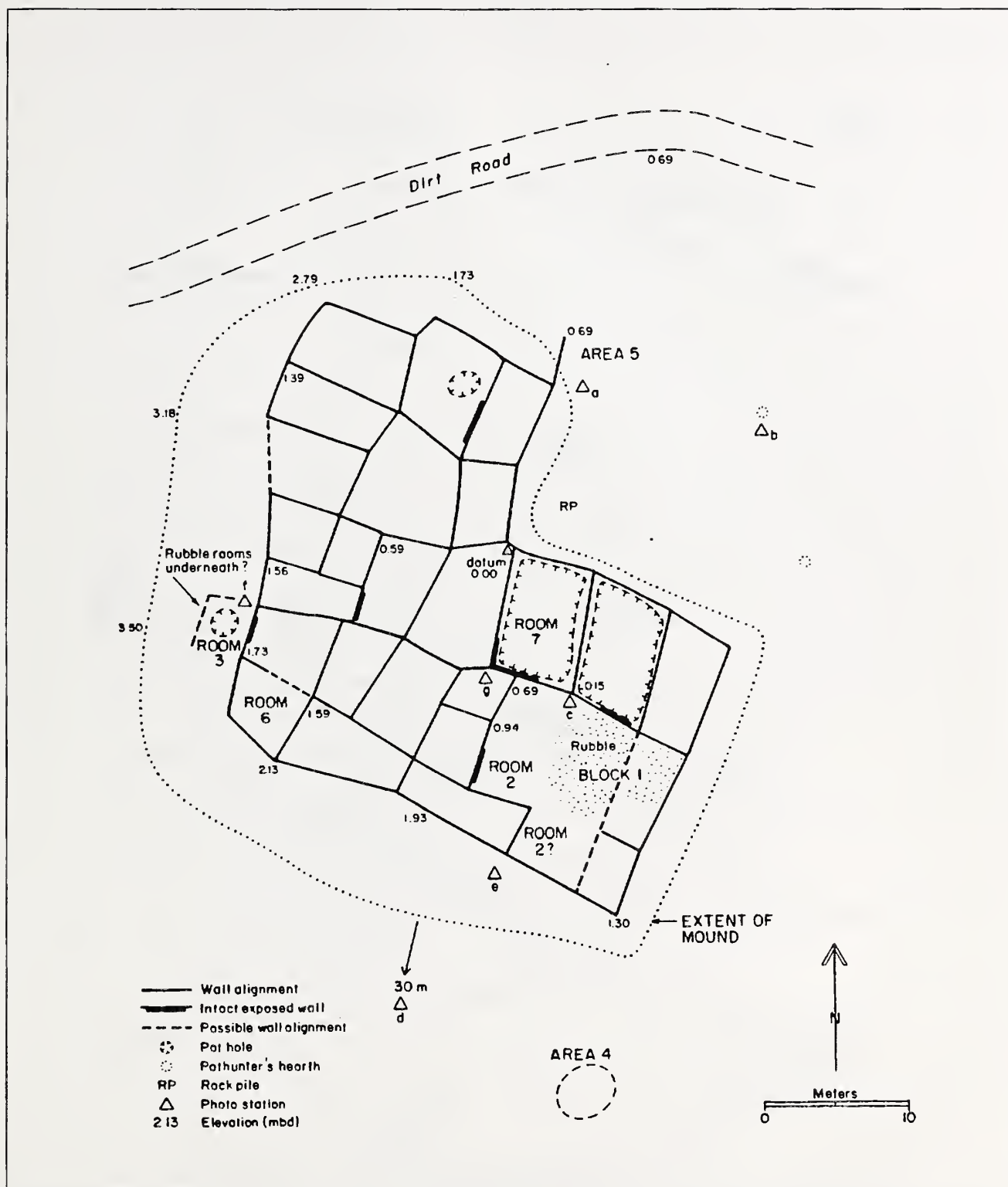


Figure 25. Map of Site AR-03-12-01-31.

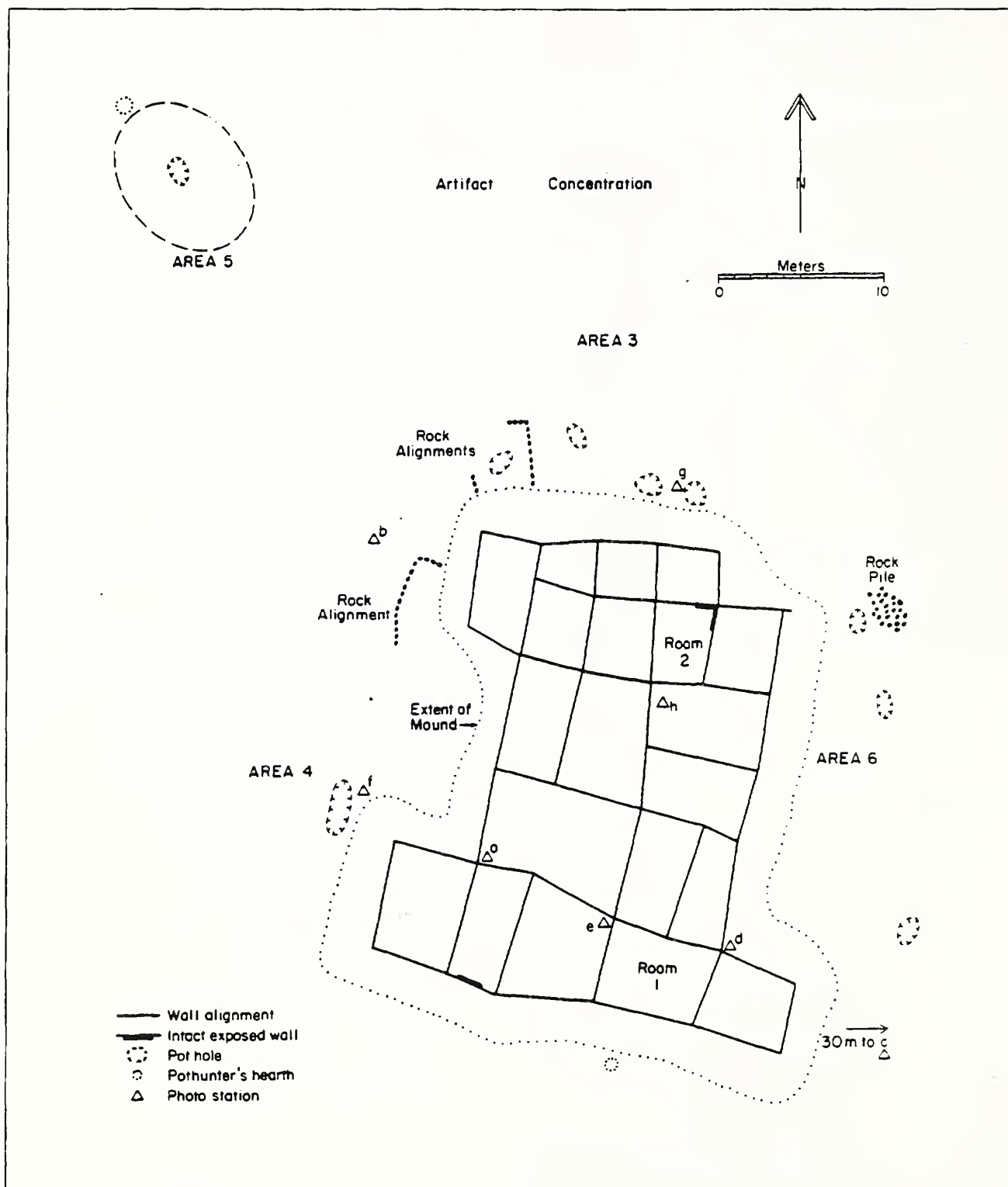


Figure 26. Map of Site AR-03-12-01-32.

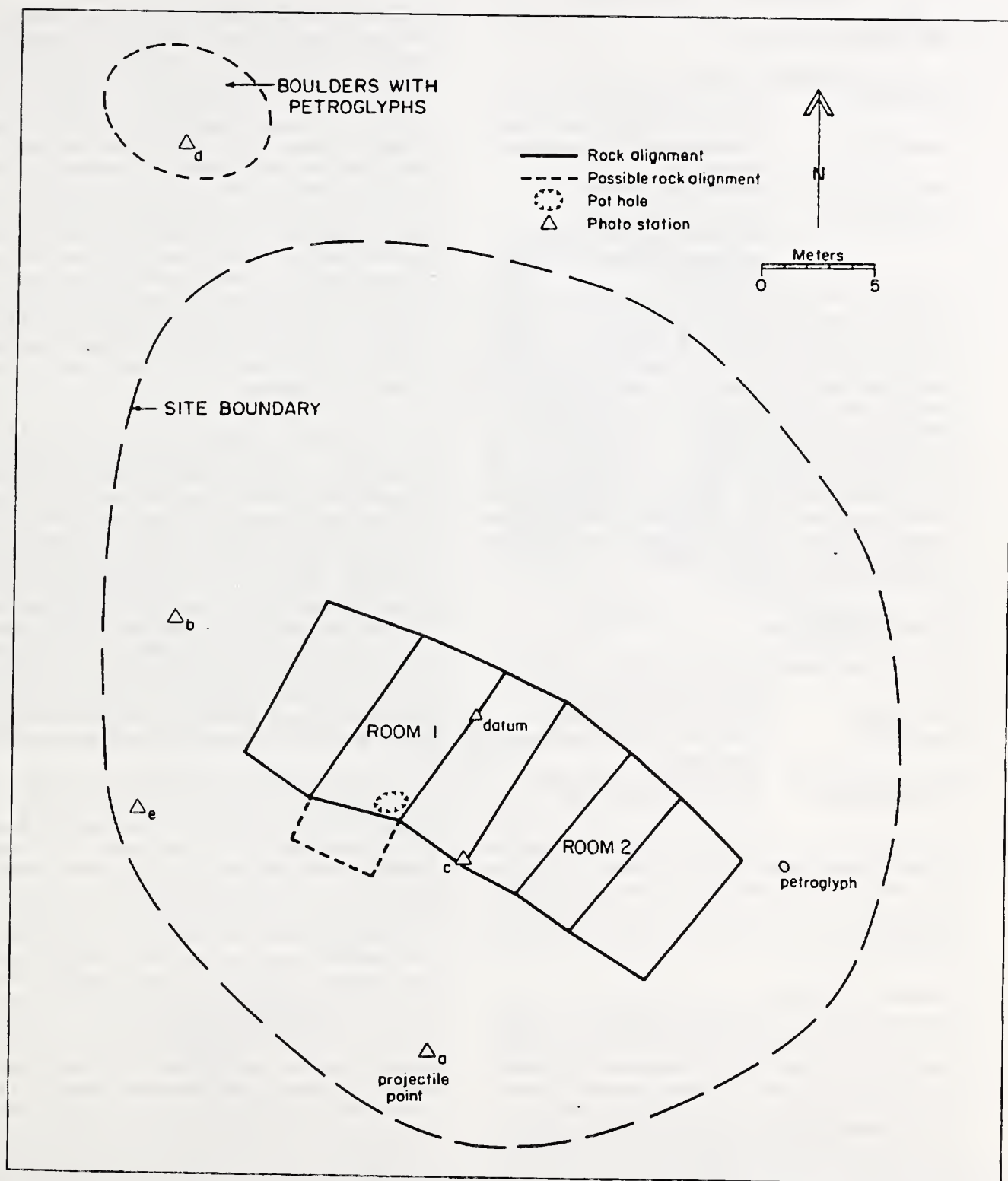


Figure 27. Map of Site AR-03-12-01-37.

in 1968.

Site AR-03-12-01-39

Alternate No./Name: NA 9870

Site Type(s): 1/11, residential/temporary residence (<10 rooms)4, agricultural

Mound Size: 5 rooms; 90 m² (minimum estimate)

Date of Occupation: Period 4 (A.D. 1300-1400)

Land Ownership: Tonto National Forest

Condition: Excellent (0 percent dug), possibly good (<25 percent dug)

Comments: AR-39 consists of a small room block located on a bench extending from the side of a hill and of several agricultural terraces downslope from the room block. Although the room block is only about 50 meters from the road, it cannot be seen from there. In 1968 the sites condition was "Good ... Not potted at all" (MNA Site Card). As of 1990, the site still appears undisturbed. There is, however, some possibility that two rooms with junipers growing on them and with few rocks inside have been pothunted. Repeat photographs strengthen the argument of no significant change in the site. Recent visitation to the room block is indicated by a possible firepit and two cans (one spam and one beverage).

Site AR-03-12-01-44

Alternate No./Name: NA9875; ARIZ O:13:2 (ASU); Squaw Creek Ruin No. 1

Site Type(s): 1, residential (>10 rooms)

Mound Size: 45 rooms; 1490 m²(minimum estimate)

Date of Occupation: Period 4 (A.D. 1300-1400)

Land Ownership: Tonto National Forest

Comments: AR-44 is situated on a low rise/ridge top in the hill country to the east of Perry Mesa proper. The site, which includes two mounds, lies next to a dirt road, several hundred meters from an abandoned mining camp (Figure 28). Construction is of basalt and granite blocks.

The site was recorded (and given an "Ariz. O" number in the ASU series) by Pilles and Miller (n.d.) in about 1967. They observed that "fifteen of the approximately thirty or more rooms of the pueblo had been at least partially dug up." Pilles rerecorded the site in 1968 for MNA (and gave it an "NA" number). In December 1977, the site was vandalized by three men from Utah, who were caught in the act, arrested, and prosecuted. The case against the three is discussed elsewhere in this report (Chapter 2: Jones, Jones, and Gevara). In January 1978, the damage was inspected

by a party that found seven rooms with evidence of "very recent excavations." The group included Peter Pilles, who matched -- i.e., duplicated -- a number of the photos that he had taken when recording the site in 1968. Another member of the party, Joel C. Johnstone, produced a sketch map of the site showing recently dug areas. The PMSVS collected data at the site in May and June of 1990. It appeared at that time that at least 90 percent of the two room blocks had been dug. During this most recent rerecording of the site, a number of earlier photographs were matched, including pairs of photos from 1968 and 1978 and single photos from 1978. A portfolio of these sets of repeat photographs appears elsewhere in this report (Appendix D). Additional photographs that were taken during the 1978 inspection visit became available after the PMSVS had left the field; these pictures remain to be matched.

Several periods of digging can be identified in Mound A at AR-44. About eight rooms have not been disturbed for a number of years. These rooms lack recognizable pothunter holes and are vegetated with mature plants, including juniper trees and catclaw acacia that is up to 5 feet in height. The juniper trees in particular may have offered some protection from pothunters. One room is covered with rocks, perhaps thrown there when an adjacent room was excavated. The areas in question do not appear to be included in any of the photos taken in the 1960s or 1970s, perhaps because they had *not* been damaged. Similarly, Johnstone's map of 1978 does not show recent digging in these areas. Whether the rooms were dug well before the 1960s is uncertain, though perhaps likely.

The rest of the mound -- some 25 to 30 rooms -- has obviously been vandalized. Much of the damage was already apparent in 1968, as can be seen in Appendix D (Figures 42 through 57, 60-62, and 67-68). Some of the damage in these photos appears recent, based on the presence of fresh backdirt (Figures 52 through 57). In the other cases, the digging may be older, as indicated by sparse revegetation. The difference in time between these two "periods" of digging is probably minimal -- the more recent digging possibly having occurred within the preceding few months, the older within the preceding year or two. As of 1978, seven to nine rooms had been recently cleared out, either entirely or in part (Figures 49-51, 55-57, and 65-66D). This damage was presumably done by Jones, Jones, and Gevara. Some of their digging was in areas that had already been disturbed (Figures 49-51 and 55-57). As of 1990, only limited evidence of digging that definitely postdates 1978 could be recognized. This evidence consists primarily of backdirt piles, which are in some cases unvegetated. One of

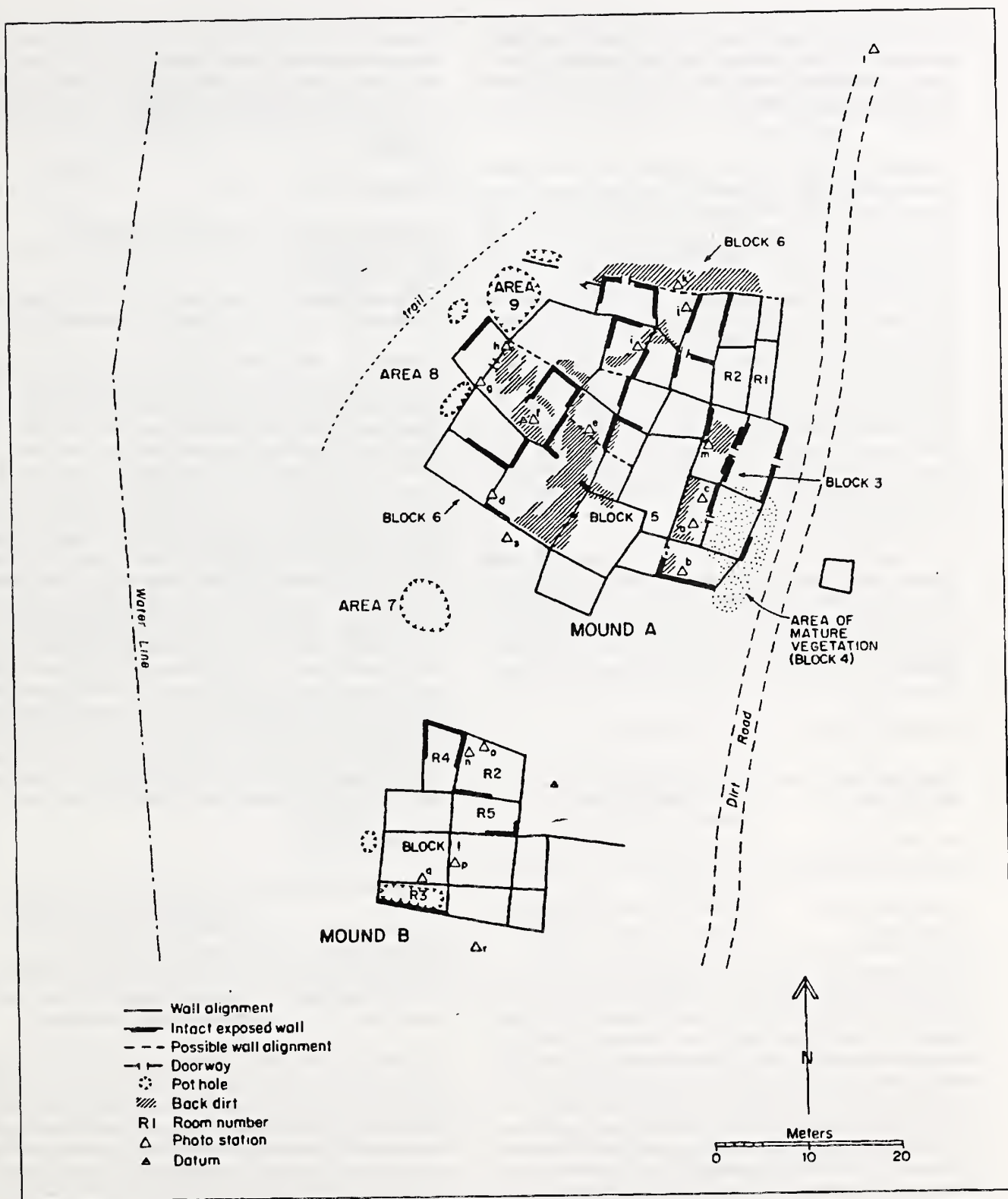


Figure 28. Map of Site AR-03-12-01-44.

these piles is visible in Figure 54, the photo from 1990. Although it is conceivable that this backdirt has survived since 1968 (see the photo for that year in Figure 52), the material was probably deposited more recently.

Johnstone's map of 1978 shows two small areas immediately west of Mound A that had been "disturbed," in some cases recently. As of 1990, on the other hand, large areas to the southwest, west, and northwest of the mound had been dug. The holes and backdirt piles in one of the areas not shown as disturbed on Johnstone's map have sides at angles of up to 45 degrees. This apparent lack of erosion is the only physical evidence collected by the PMSVS that might provide a basis for distinguishing pre- and post-1978 vandalism off the mound. It seems likely, nevertheless, that most of this digging has occurred since 1978. This inference, combined with the small amount of evidence of digging on the mound since 1978, suggests a partial shift in emphasis from digging on (already disturbed) mounds to digging in (less disturbed) off-mound areas.

As in the case of Mound A, portions of Mound B were already dug in 1968 (Figure 67). There is, on the other hand, no evidence that this mound was touched by Jones, Jones, and Gevara. As of the summer of 1990, it appeared that most of Mound B had been dug, though there was little definite evidence of recent digging.

Site NA 11414

Alternate No./Name: ARIZ N:16:23(MNA)
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 6+ rooms; 80 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1330/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: NA 11414 is located in the western portion of Perry Mesa, at the foot of Joe's Hill and near the point of entrenchment of what is initially a shallow canyon. The site is a few tens of meters from a jeep trail that was destroyed, presumably after construction of the APS powerlines. MNA recorded the site in 1972 as consisting of two small room blocks (MNA Site Card). At that time, the site was "eroded but not pot hunted." Today only the larger of these structures remains, the other apparently having been bulldozed out of existence. The area adjacent to three sides of the surviving structure has also been bladed, from the edge of the mound outward for a distance of 15 to 25

meters. A repeat photograph shows that there has been several centimeters of deposition in the unbladed area next to the mound; this sediment probably came from the bladed area. The bulldozer damage almost certainly occurred when the adjacent road was destroyed.

Site NA 11415

Alternate No./Name: ARIZ N:16:24(MNA)
 Site Type(s): 8, communication (rock art)
 Date of Occupation: ?
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: NA 11415 overlooks the upper reaches of a small canyon that is tributary to Lousy Canyon. The site is about 500 meters from a jeep trail that today ends at the APS powerlines (see NA 11414). The Museum of Northern Arizona recorded the site -- in 1972 -- as consisting of petroglyphs in an area 20 m across (MNA Site Card). There is no estimate of the number of panels or motifs that were present, though MNA archeologists photographed a single boulder with at least two motifs on it. MNA's records indicate that this boulder was situated where one of the towers on the APS powerlines was to be built. The site -- specifically, the boulder photographed by MNA -- could not be relocated. Attention was focused on the two towers (one for each powerline) that are in the vicinity of the site's mapped location. Presumably, the boulder with the petroglyphs was pushed aside during construction of one or the other tower and lost. It should be emphasized, therefore, that the site's condition is "excellent" only in the limited and, in this case, largely irrelevant sense that it has not been dug.

Site NA 11439

Alternate No./Name: Rattlesnake Ruin; ARIZ N:16:40; ARIZ N:16:1(BLM)
 Site Type(s): 1, residential (>10 rooms)
 Mound Size: 50 rooms; 1840 m²
 Date of Occupation: Period 4 (A.D. 1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Poor (>50 percent dug)

Comments: NA 11439 is located 100 to 200 meters south of Perry Tank Canyon. The site consists of a large mound measuring 2.0 to 2.5 meters in height, several outlying middens up to a meter in height, scattered surface artifacts, and a large, circular feature measuring about a half meter in depth and of unknown function (Figure 29). The site is about 75 meters north of a dirt road, on a spur road leading to the site. In 1972, the site's condition was recorded as

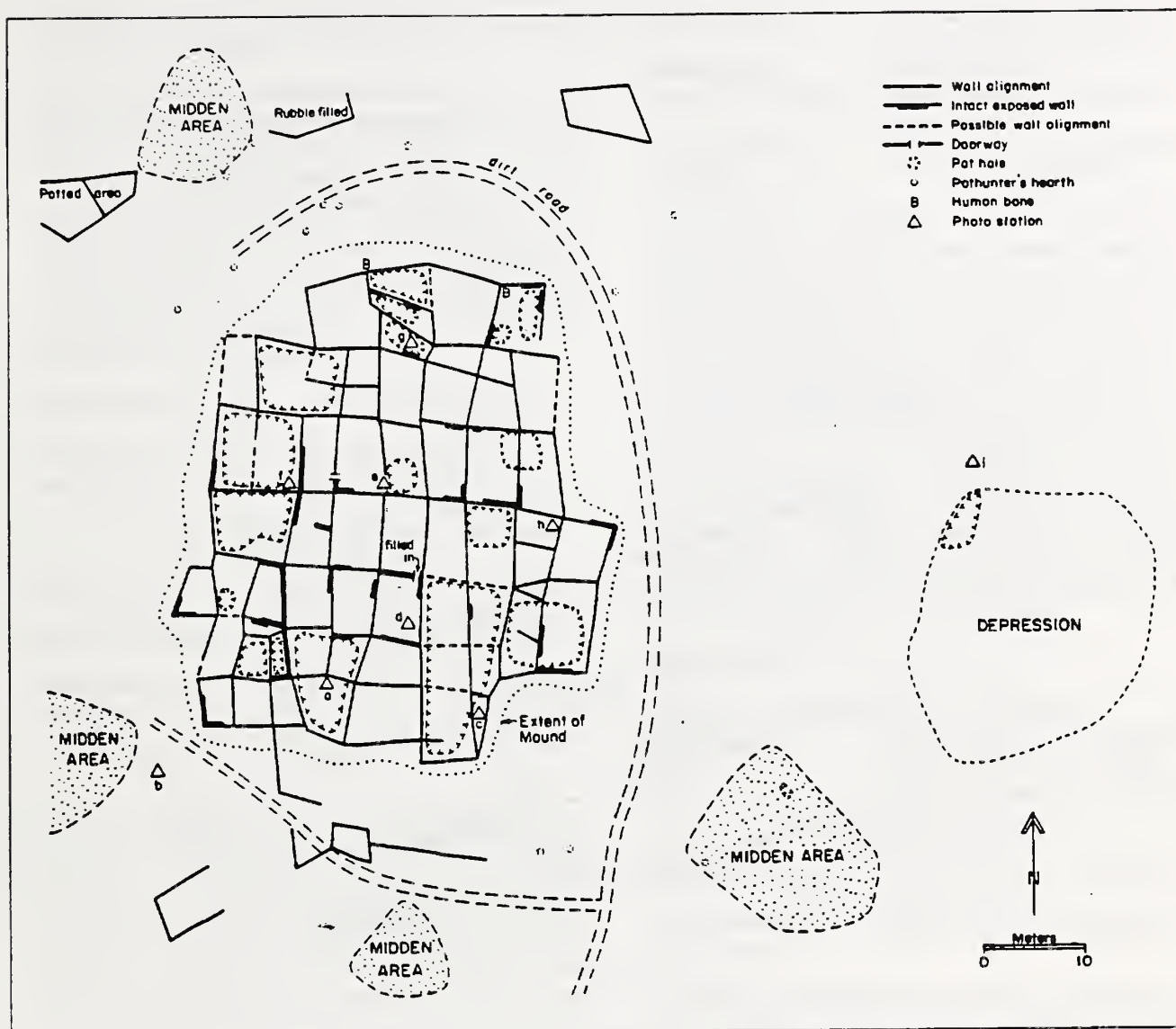


Figure 29. Map of Site NA 11439.

"good, eroded, but potted" (MNA Site Card). Today (summer, 1990) it appears that practically all, if not all, rooms have been dug into. A companion site, NA 11490, is discussed elsewhere ("Additional Sites: Not in Sample").

Two periods of digging in the mound are postulated. Older digging is represented by holes that have been partially filled by washed-in dirt and by a lack of recognizable backdirt on high places, such as rubble piles, where this material would probably have been thrown. These areas have been revegetated with catclaw, prickly-pear clumps, and so forth. The more recent damage is represented by fresher-looking dirt

and by backdirt that has not washed into adjacent rooms. Revegetation in these areas is by grasses, annuals, and snakeweed. Approximately 40 percent of the mound shows evidence of this period of damage. Although this temporal dichotomy in digging is probably correct, both periods doubtless include many separate episodes of digging. In any case, it is clear that the recent digging has occurred since 1972, when MNA recorded the site. Also, some at least of the earlier digging pre-dates 1972, and, therefore, was responsible for the damage noted at that time. Repeat photography indicates that the mound is brushier today than in 1972 -- probably a reflection of the growth of catclaw and prickly pear in areas of older digging.

Pueblo Pato, one of the largest residential sites on Perry Mesa, is located 0.6 km to the south of NA11647.

As in the case of other "communication" sites, investigation of NA 11647 involved walking across the site looking for rock art. MNA archeologists photographed a number of panels and motifs at the site in 1972, and they observed that there was "no vandalism." Two of the panels recorded by MNA were relocated; there appears to have been no change in the petroglyphs over the last 18 years. In addition, no initials or other recent graffiti were noted. No evidence of digging was observed, either in the probable midden deposit or elsewhere on the talus slope.

Site NA 11682

Alternate No./Name: ARIZ N:16:81(MNA)
Site Type(s): 1, residential (≥ 10 rooms), possibly 1/11, residential/temporary residence (< 10 rooms)
4, agricultural
Mound Size: 10-15 rooms; 80 m²(minimum estimate, main mound only)
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Fair (25-50 percent dug), possibly poor (> 50 percent dug) for the mound

Comments: NA 11682 is located at the edge of the mesa, on a point overlooking Perry Tank Canyon to the south. It is 1.5 km from the road leading to the APS powerline and, thus, is not particularly accessible. The site was difficult to find because its actual location turned out to be 500 meters east of the mapped location. The site includes a 1-meter high mound incorporating four or five rooms (Figure 30), a couple of structures with from one to three rooms, apparent agricultural terraces, and rock piles and alignments of uncertain function. Although there are probably at least 10 rooms, the exact count and, therefore, the correct site type depends on the correct differentiation of habitation structures and agricultural terraces. In 1973, the site's condition was recorded as "good, only 1 pothole" (MNA Site Card). There is more evidence of damage today, including four holes distributed among the three best-defined rooms in the mound. Wall stones exposed by one hole are covered by lichen, indicating that the hole is old and, therefore, that it is probably the one recorded in 1973.

Site NA 11687

Alternate No./Name: ARIZ N:16:82(MNA)

Site Type(s): 1/11, residential/temporary residence (< 10 rooms)
Mound Size: 2 rooms; 60 m²
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Poor (> 50 percent dug)

Comments: NA 11687 is a small, two-room site overlooking the (at that point) shallow canyon of Bishop Creek. The site is about 200 meters from the Bloody Basin Road. The site's condition was recorded in 1973 as "collapsed but good" (MNA Site Card). By the summer of 1990, one of the two rooms had been excavated, and the other had possibly been dug into. In the case of the excavated room, backdirt is recognizable on the surrounding rubble, though it has washed down considerably. Revegetation is limited to snakeweed and grass. A wooden handle, probably from an entrenching tool, was found on the site, along with several aluminum beverage cans. That NA 11687 has been vandalized is perhaps to be expected, given its proximity to a relatively well-traveled road and its location atop a low escarpment.

Site NA 11785

Alternate No./Name: ARIZ N:16:86(MNA)
Site Type(s): Recorded as 1/11, residential/temporary residence (< 10 rooms); probably 1, residential (≥ 10 rooms)
Mound Size: 8-10 rooms; 470 m²
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Poor (> 50 percent dug)

Comments: NA 11785 consists of a small, low mound and associated artifact scatter located on a rise set back from the south rim of Perry Tank Canyon. The site is visible from a dirt road that passes by 60 meters to the south. In 1973 the site's condition was "undisturbed; collapsed and filled over" (MNA Site Card); as of 1990 its condition is poor; that is, over 50 percent of the site has been excavated. This estimate is not based on the presence of large numbers of holes and backdirt piles (though some such are present). It depends instead on the "churned" look of much of the mound area. Two repeat photographs show three possible indicators of digging in the years since 1973: stones in a wall exposed to a greater depth than previously, an increase in one area in exposed earth, and the replacement in an adjacent area of low growth by a 6-foot catclaw acacia and large prickly pear clumps.

Site NA 11792

Alternate No./Name: ARIZ N:16:?(MNA)
Site Type(s): 1, residential (≥ 10 rooms) 8, communication (rock art)
Mound Size: 35-50 rooms; 610 m²
Date of Occupation: Period 4 (A.D. 1300-1400)
Land Ownership: Bureau of Land Management
Condition: Poor (>50 percent dug)

Comments: NA 11792 consists of a compact mound, and associated artifact scatter (Figure 31), in a spectacular setting on the rim of Perry Mesa overlooking the canyon of the Agua Fria River. Access to the site is difficult, to the extent that the nearest jeep trail ends at the APS powerlines, 1.5 kilometers to the east. Prior to construction of the powerlines, the jeep trail came at most 0.2 kilometers closer to the site. As of 1973, NA 11792 was "eroded, collapsed, pothunted" (MNA Site Card). At present (1990), it appears that all, or nearly all, rooms have been dug, at least partially. No evidence of digging was recognized around the mound; this area has, however, been badly trampled by cattle.

Three periods of digging in the mound can be identified, at least tentatively. First, the oldest digging is evidenced by rooms that have filled to a fairly level surface and by revegetation that involves primarily grass and small shrubs and secondarily prickly pear cactus and agave. It seems reasonable to infer that much of this damage, which is present over perhaps 80 percent of the mound, pre-dates 1973. (It is possible, though not likely, that some of the rooms involved have not been dug at all, in other words, that "natural collapse" is being mistaken for old and largely healed pothunter damage.)

An intermediate period of digging is represented by holes that are up to 2 meters deep and several meters across. The lack of refilling through erosion makes the holes look recent, whereas the lack of "fresh" dirt, both on the backdirt piles and in the holes, makes the digging appear older than that of the most recent episode. Two rooms in particular--about 10 to 15 percent of the mound--show this kind of damage. This damage probably post-dates 1973. Finally, the most recent period of digging is indicated by holes that are small (less than 2 meters across), relative to the size of a room. The holes, which do not follow the walls of rooms, are often in areas that appear to have been dug earlier. The holes look fresh and have been revegetated with grass and small shrubs, though bare earth is also present in the holes and on the associated backdirt piles. Three holes, accounting for perhaps 5 percent of the mound's area, were assigned to this period of digging.

Site NA 11793

Alternate No./Name: ARIZ N:16:94(MNA)
Site Type(s): 1/11, residential/temporary residence (<10 rooms)
Mound Size: 2 rooms; 40 m² (minimum estimate)
Date of Occupation: Period 4 (A.D. 1300-1400)
Land Ownership: Bureau of Land Management
Condition: Excellent (0 percent dug)

Comments: NA 11793 is located about 0.6 km south of Perry Tank Canyon. The site was found, with some difficulty, about 200 meters from its mapped location. It is not visible from the dirt road that passes by about 80 m to the north. In 1973, the site was "eroded, collapsed" (MNA Site Card); it remains undamaged as of summer, 1990.

Site NA 13295

Alternate No./Name: ARIZ N:16:109(MNA); ARIZ N:16:45B(PC)
Site Type(s): 1, residential (>10 rooms)
Mound Size: 9-12 rooms; 280 m²
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Poor (>50 percent dug)

Comments: NA 13295 is on the south rim of Baby Canyon, through which flows Bishop Creek (Figure 32). It lies several hundred meters southeast of ARIZ N:16:45(PC) and was recorded by the CAEP as Area B of that site. The site's condition in 1973 was "good; slightly potted" (MNA Site Card). Today (1990), it appears that most of the rooms have been dug in, but not dug out. That is, it is likely that substantial deposits remain. Three rooms have one distinct, though small and shallow (<0.5 meters deep), hole each. These holes have been revegetated with grass and snakeweed and, in at least two cases, are at least several years old. The third hole has more recognizable backdirt in association with it and, therefore, appears more recent than the other holes; it may be only a couple years old.

Site NA 13304

Alternate No./Name: ARIZ N:16:?(MNA)
Site Type(s): 18, probable habitation (pit house?) 1/11, residential/temporary residence?
Mound Size: 5 m²
Date of Occupation: Period 2 (pre-A.D. 1150)
Land Ownership: Bureau of Land Management
Condition: Excellent (0 percent dug)

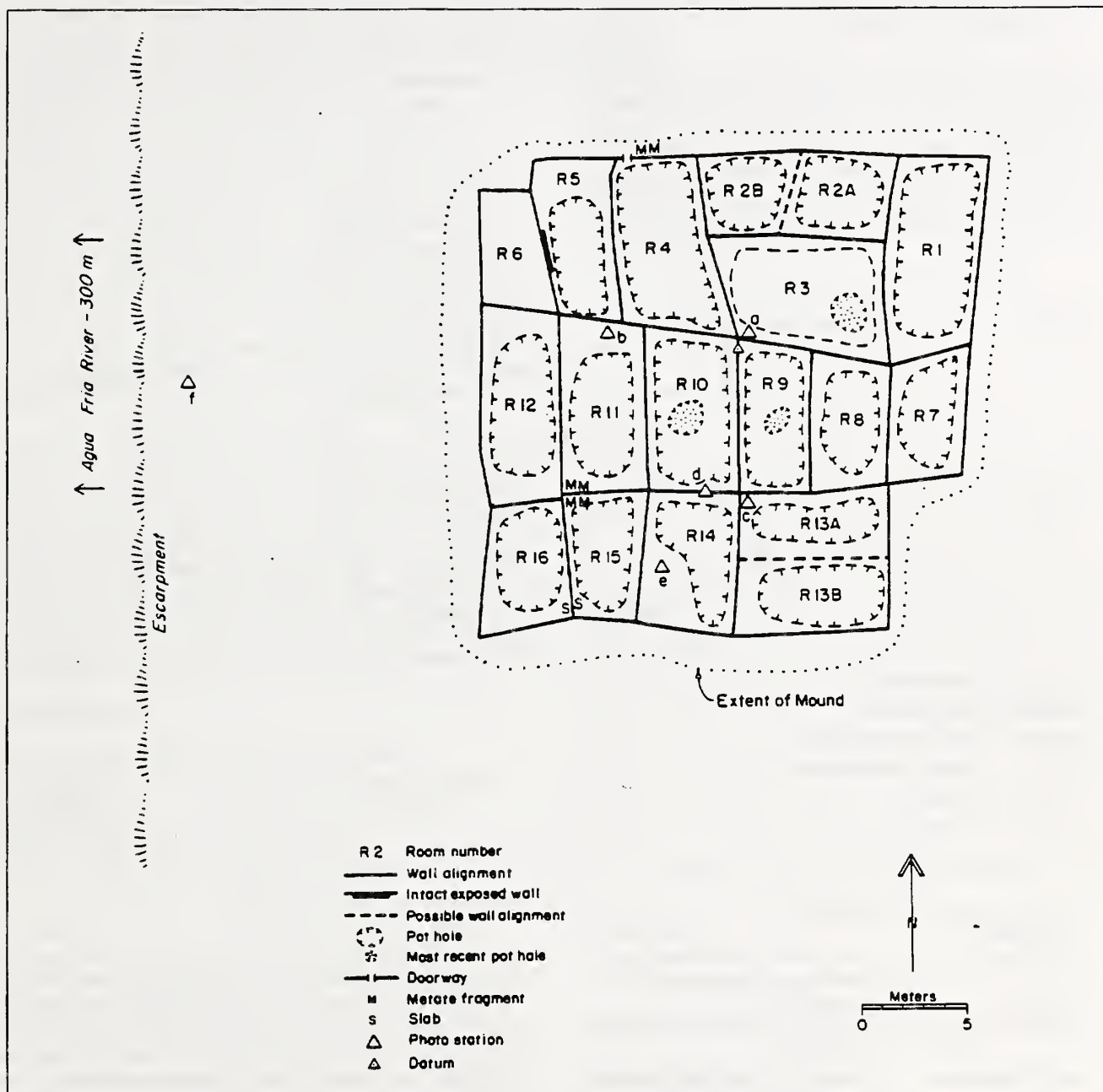


Figure 31. Map of Site NA 11792.

Comments: NA 13304 is located toward the "center" of the mesa, more than a kilometer and a half from the nearest major canyon. Several jeep trails run over the site; one crosses a possible structure (in fact, a rock alignment) on a low mound. The presence of this structure suggests that the site should be assigned to Type 1/11, as well as to Type 18. Nevertheless, NA 13304 remains primarily a Type 18, probable habita-

tion, site. In 1974, the site's condition was "good" (MNA Site Card); as of 1990, it is still unvandalized, though the west edge of the site is used as a salt lick and has been badly trampled by livestock.

Site NA 13314

Alternate No./Name: ARIZ N:16:130(MNA)

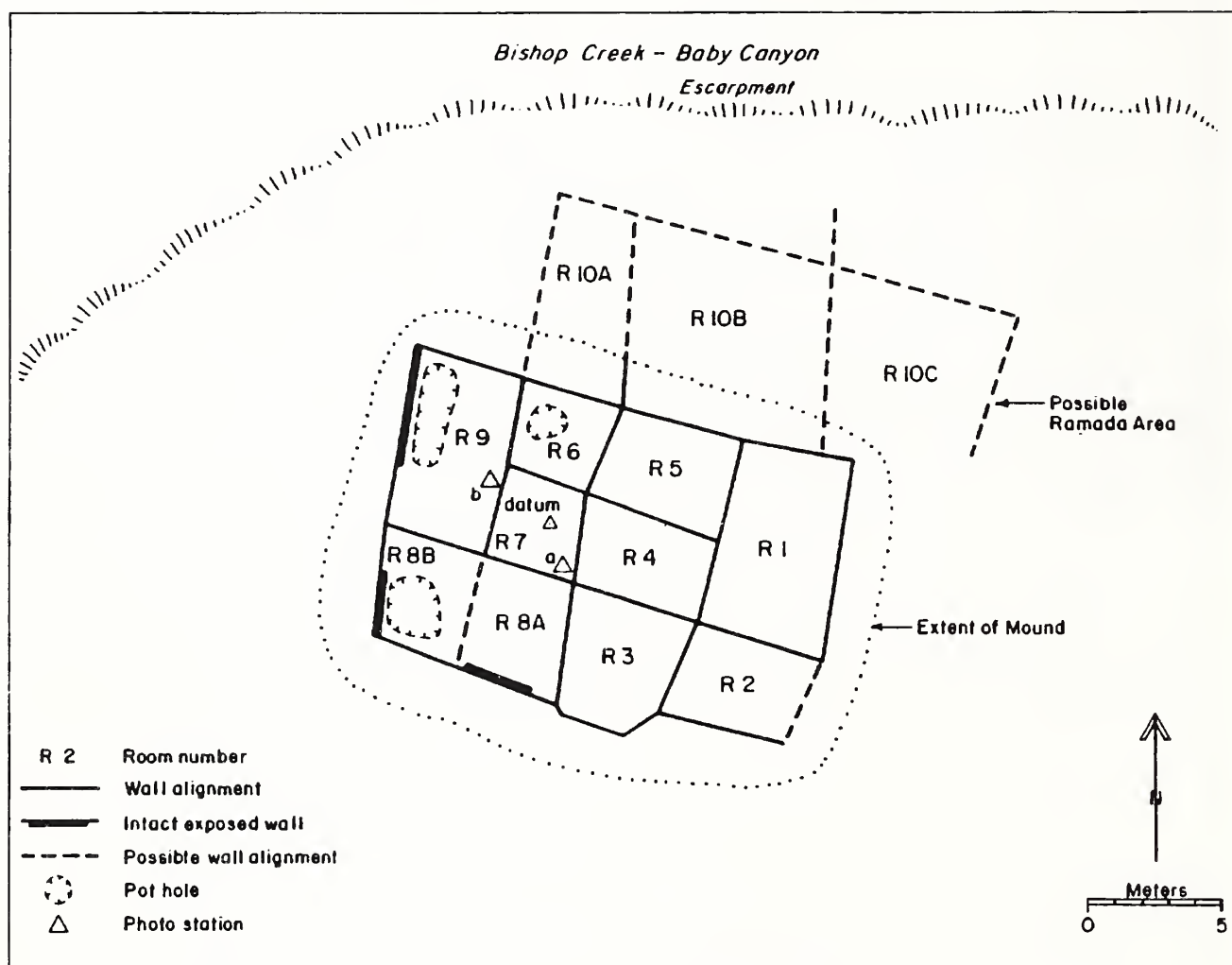


Figure 32. Map of Site NA 13295.

Site Type(s): 1/11, residential/temporary residence (<10 rooms)

Mound Size: 1 room; 50 m²

Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)

Land Ownership: Bureau of Land Management

Condition: Poor (>50 percent dug), possibly Excellent (0 percent dug)

Comments: NA 13314 consists of a one- or two-room mound and associated artifact scatter located on the gentle north-facing slope of a low ridge several hundred meters north of and paralleling Baby Canyon (Figure 33). The site's condition was recorded as "undisturbed" in 1974 (MNA Site Card). Today, (1990) it appears that rocks have been removed from the center of the mound and that this area may have been dug. The evidence of digging is not conclusive,

however, and if the mound has been dug, the excavation has mostly filled in, indicating that insert figure 32insert figure 33the damage occurred more than a few years ago. This would suggest that the condition of the mound was about the same in 1974 as it is today, but that this condition was interpreted differently then (by MNA) and now (by the Perry Mesa Site Vandalism Study).

Site NA 13316

Alternate No./Name: ARIZ N:16:132(MNA)

Site Type(s): 18, probable habitation (pit house?)

Date of Occupation: Periods 2/3? (pre-A.D. 1150/1150-1300)

Land Ownership: Bureau of Land Management

Condition: Excellent (0 percent dug)

Comments: NA13316 is located on the northwest side of the valley drained by Lousy Creek; the point of entrenchment of Lousy Canyon is 100 to 150 meters downstream and to the south. The site is several hundred meters west of Lousy Tank, which can be reached by a jeep trail. Surface materials include abundant ceramics and lithics, a number of ground-stone tools, and scattered structural remains. Ceramics include approximately six whiteware sherds (including one black-on-white). Considering the abundance of ceramics and the presence of whiteware, it is noteworthy that no Hopi or Salado polychrome sherds were observed. This could indicate a Period 2 (pre-A.D. 1150) or Period 3 (A.D. 1150-1300) date for the site. No pit house depressions were noted, but the combination of abundant artifacts and the rock features suggests that pit houses may be present.

A complex of dilapidated corrals covers the eastern portion of NA 13316. This area has been trampled by livestock, and it is possible that rock features like those found elsewhere on the site have been obscured. No evidence of digging was noted on the site, either in or away from the "structures." Several piles of artifacts were noted, however, suggesting that the site has been surface collected. Considering the abundance of tools, it is likely that projectile points and perhaps other items have been removed from the site.

Site NA 13319

Alternate No./Name: ARIZ:N:16:?(MNA)
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1-2 rooms; 50 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: NA 13319 consists of a small rubble mound and associated artifact scatter and is located on a gentle, south-facing slope between Joe's Hill and Lousy Canyon. It is approximately 300 meters south of a jeep trail leading to the APS powerlines. (The site recorded is probably NA 13319: the map plot and description fit reasonably well, though neither line of evidence is definitive.) The site was recorded in 1974 as "eroded" (MNA Site Card); it remains undamaged (summer, 1990).

Site NA 13328

Alternate No./Name: ARIZ N:16:144(MNA)
 Site Type(s): 2, resource procurement
 Date of Occupation: ?

Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: NA 13328 is a sparse lithic, sherd, and ground-stone (1 piece) scatter located in a valley near the head of Lousy Canyon. The site is about 400 m from a jeep trail, and there is nothing to indicate its presence except the artifacts themselves. There is no evidence of digging, though there has been some minor damage from erosion and from a cattle trail that crosses the site.

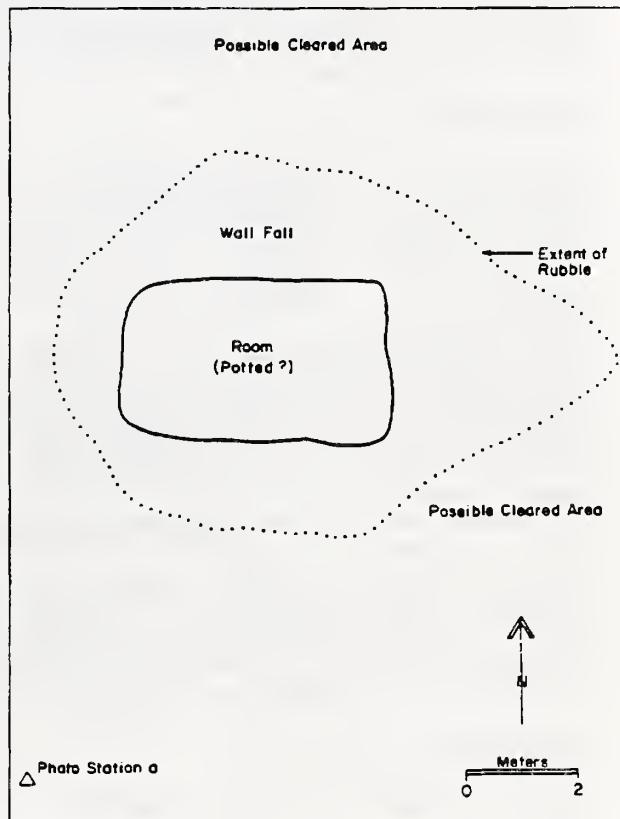


Figure 33. Map of Site NA 13314.

Site NA 13330

Alternate No./Name:
 Site Type(s): 2, resource procurement; 4, agricultural; 8, communication (rock art)
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: NA 13330 is located on and around a rock

outcrop overlooking one of the branches of Lousy Creek, about a half a kilometer above the entrenchment point of Lousy Canyon. The site has numerous (16+) deep, narrow, bedrock metates/mortars, a handful of rock-art motifs, and an oblong "structure" in an area of bedrock and boulders. Assuming that the local environment has not changed, the metates/mortars were probably used to process acorns from the oak trees that grow in the vicinity. NA 13330 is about 300 meters from a jeep trail. No damage was noted on the site, though spent shotgun shells indicate that it has been visited in recent years. Site C(PMSVS) is located across the drainage and might be considered part of the same site.

Site NA 13338

Alternate No./Name: ARIZ N:16:154(MNA)
 Site Type(s): 8, communication (rock art)
 Date of Occupation: ?
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: NA 13338 consists of a number of rock art panels scattered along a low cliff on the south rim of Baby Canyon. The site overlooks the saddle that links the mesa to the prominence on which ARIZ N:16:45A is located. Three areas of rock art are located along a stretch of the cliff some 200 meters in length. Area 3, the eastern most of these, is the part of the site recorded by MNA as NA 13338. There are a few artifacts, mostly sherds, on the slope beneath the rock exposures. There is no evidence of digging on this slope or in the level space under a shallow overhang that is the center of Area 1. In addition, no damage to the rock art, other than natural weathering, was noted.

Site NA 13350

Alternate No./Name: ARIZ N:16:165(MNA)
 Site Type(s): 7, defensive
 Date of Occupation: Period 3? (A.D. 1150-1300)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: NA 13350 is a defensive site -- in fact, a fortified site -- situated at the end of a long, narrow point separating two branches of Lousy Canyon. It is about a kilometer from Lousy Tank and the nearest jeep trail. Thick masonry walls restrict access from the east, while cliffs make the site inaccessible from other directions. The walls contain "loop holes" that presumably were designed for shooting arrows at attackers. Behind these defensive works, toward the end of the point, there is an artifact scatter and a rubble pile/concentration that appears to be a small, one-room

structure. Because the site is so impressive, it is probably well known; a hearth and some trash provide evidence of recent visitation. No evidence of digging was noted. Most of the site area is bedrock or rocky talus, so there is little room to dig. It is, on the other hand, likely that visitors have contributed to the collapse of walls in some areas, either by knocking them over or simply by climbing over them to get into and around the site. The steep slope on the north side of the site, below the defensive wall and the cliff on which it stands, shows evidence of considerable, recent digging by javelina.

Site ARIZ N:16:9(PC)

Alternate No./Name: None known
 Site Type(s): 1 8, probable habitation (pit house?) or 2, resource procurement
 Date of Occupation: Period 2? (pre-A.D. 1150)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: The area recorded as ARIZ N:16:9 fits the site description (distance from Lousy Tank, location of boulders) on the CAEP site form, but is a couple hundred meters northeast of the mapped location. It is a few meters from the jeep trail that leads to Lousy Tank. The site is a sparse lithic and sherd scatter located in a valley just above the point of entrenchment of Lousy Canyon. According to the CAEP form, the site covers "too large an area for just a sherd and lithic scatter ... must be habitation ... may be pits or buried masonry." The form also refers to rocks that may be from masonry structures. In contrast, the evidence recorded by the PMSVS provides little if any basis for inferring the presence of structures. Thus, N:16:9 appears to be a Type 2, resource procurement, site. Either the two recording teams perceived the site in different ways, or the PMSVS was recording a different site.

Site ARIZ N:16:11(PC)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence
 Mound Size: 2 rooms; 40 m² (minimum estimate)
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: ARIZ N:16:11 is situated 50-75 meters back from the south rim of Lousy Canyon. It is 0.6 km

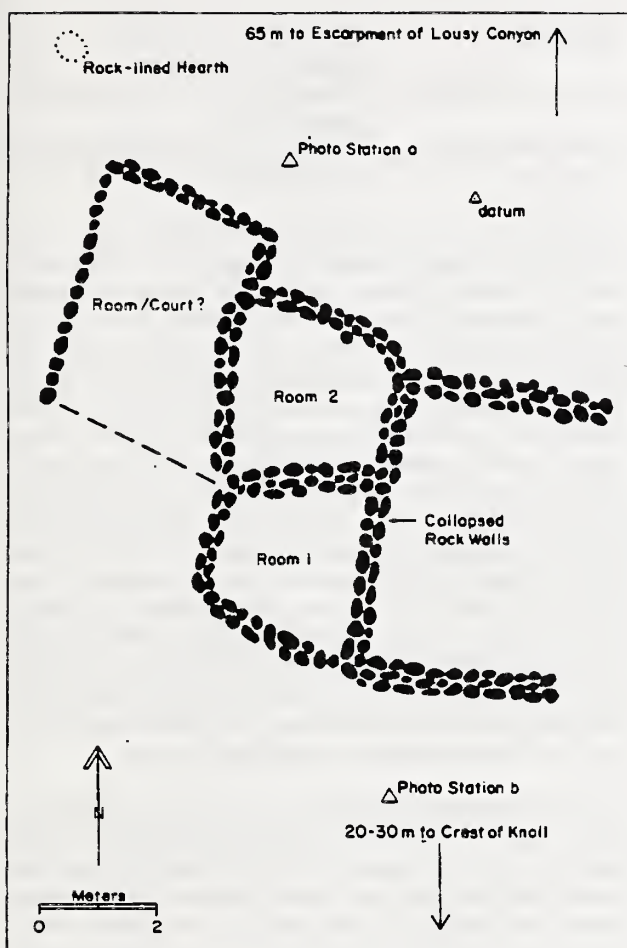


Figure 34. Map of Site ARIZ N:16:11(PC).

from the nearest jeep trail as shown on the map, but 1.2 km from the end of that jeep trail "on the ground." Architectural remains consist of the outlines of two rooms and the partial outlines of two spaces that may have been rooms or courtyards (Figure 34). An apparently recent rock-lined hearth lies a few meters from the structure. The site is undamaged.

Site ARIZ N:16:16(PC)

Alternate No./Name:
 Site Type(s): 1, residential (>10 rooms)
 Mound Size: 11+ rooms; 900 m²
 (2 mounds)
 Date of Occupation: Period 3/4 (A.D. 1150-1300/
 1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Good (<25 percent dug)

Comments: ARIZ N:16:16 is on a fairly level hilltop,

400 to 500 meters north of the canyon of Larry Creek. The site is readily visible from a dirt road that passes by less than 50 meters to the north. A similar site ARIZ N:16:17, lies 150 meters to the south. There are two low mounds, each of which has several room outlines and wall alignments but relatively little rubble overall. The site may have been robbed of building stones prehistorically. There are also two contiguous rock rings, one 4 meters and the other 2 meters in diameter.

The site appears to be in generally good shape. There are only a few areas that have clearly been pothunted, and the kind of systematic, wholesale damage noted in other sites is absent. There is, for example, a trench dug along the wall of one room. The hole looks more than a couple years old: the sides have eroded in to an angle of less than 45 degrees, and there is a large prickly pear growing in the bottom. On the other hand, it should be noted that, because of the scarcity of building stones to be piled up, the evidence of digging may be obscured by erosion more rapidly at this site than elsewhere. Recent trash, including beverage cans, screw-cap wine bottles, a propane canister, and miscellaneous cans, is present on the site and in the area between the site and the road. Much of this material probably relates to the use of the area by campers who may or may not have included pothunting among their activities.

Site ARIZ N:16:17(PC)

Alternate No./Name: None known
 Site Type(s): 1, residential (>10 rooms)
 Mound Size: 4+ rooms; 220 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1300/
 1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Good (<25 percent dug), possibly Fair (25-50 percent dug)

Comments: ARIZ N:16:17 is on a fairly level hilltop, 200 to 300 meters north of Larry Creek canyon and 150 meters south of ARIZ N:16:16. The site includes a low mound with rock alignments that outline what in some cases are rectangular "room" spaces, but in others are more difficult to recognize as rooms. As in the case of N:16:16, there appears to be a shortage of rock rubble on the site. The site looks to be in fairly good shape, but assessing damage is problematic. There are at least two holes that have mostly eroded in, and a trench has been dug along one wall. The amount of erosion and revegetation of these pothunter holes is comparable to that at N:16:16. Also, there are a number of cans and a recent hearth on the site, which indicates visitation and, probably, pothunting. Otherwise, the site looks undisturbed. The wall outlines

mapped in 1990 are, however, much "messier" than those on the CAEP site form, which was filled out in 1973. The lack of rubble, combined with the fact that wall outlines are mostly only one stone high, means that walls could easily be obscured by pothunting. This would suggest considerable digging has taken place since 1973. Alternatively, the differences in the maps could be a function of differences in mapping standards between the CAEP and the PMSVS. Also, if there had been substantial digging since 1973, the resulting damage should be apparent. It is difficult to choose between these two interpretations of N:16:17's recent history on the basis of available evidence.

Site ARIZ N:16:26(PC)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms); 4, agricultural; 8, communication (rock art)
 Mound Size: 2-3 rooms; 100 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Poor (>50 percent dug)

Comments: ARIZ N:16:26 is a small site located on the north rim of Baby Canyon, half a kilometer from the Bloody Basin Road. It includes two contiguous rooms, a large feature consisting of a rock ring 15 meters in diameter with a roasting pit in the center, and a handful of rock-art motifs on boulders located between the cliff and the rest of the site (Figure 35). Wall alignments to the west of the room block are probably agricultural features, though they could be rooms. The northern of the two rooms in the room block has been dug at least partially; the evidence comes from a depression in the room's northwest corner.

Backdirt from this excavation is present on the adjacent wall, and revegetation of the hole is limited to grass and small shrubs. The fill in the rest of this room, and in the other room as well, is fairly level and contains no holes or other evidence of damage. Nevertheless, these areas "look" dug, probably because the wall rubble is quite a bit higher than the fill -- that is, the rooms look dug out. If the rooms have been excavated, it occurred some time ago.

Site ARIZ N:16:28(PC)

Alternate No./Name: NA 11830; ARIZ N:16:96(MNA)
 Site Type(s): 1, residential (≥ 10 rooms); 4, agricultural; 7, defensive; 8, communication (rock art)

Mound Size: 12+ rooms; 120 m²
 (minimum estimate)
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Poor (>50 percent dug)

Comments: ARIZ N:16:28 is a complex site on the north rim of Baby Canyon, about a half a kilometer from the Bloody Basin Road. The site is on a broad point, across the "neck" of which there is a massive wall that can only be considered defensive (Figure 36). Within this wall there are a large number of structures, including both rooms and agricultural terraces. Both MNA and the CAEP recorded the site in 1973. MNA (Site Card) identified the majority of structures as rooms, whereas the CAEP (Site Form) identified about equal number of rooms and terraces. According to the MNA Site Card, the site's condition in 1973 included "minor vandalism, otherwise good." Between then and now (1990), the site has been extensively vandalized. Based on the evidence revealed by the digging, it appears that there is a room block of about six rooms, a structure that is either a room or a terrace, and about ten major agricultural terraces; the latter account for most of the area within the defensive wall.

One structure that is probably a terrace has had holes dug in two of its corners, and the terrace/room has been slightly damaged. The room block has been almost entirely dug, and some interior dividing walls have been largely, if not entirely, destroyed. More than one period of digging is represented. Older digging is indicated by sloping room fill at a level well below the tops of the walls (up to a meter and more), by revegetation of this fill with a thick growth of catclaw and shrubs, and in general by the lack of sufficient recognizable backdirt to match the amount of digging that has occurred. More recent digging is evidenced by smaller holes that appear to have been dug into the older fill level. These holes and associated backdirt are only partly revegetated with grass and small shrubs. Grocery store bags that are only a couple years old -- some have a stamp that appears to indicate manufacture in 1988 -- were probably left by those responsible for at least some of this recent digging.

Site ARIZ N:16:40(PC)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 6-8 rooms; 130 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)

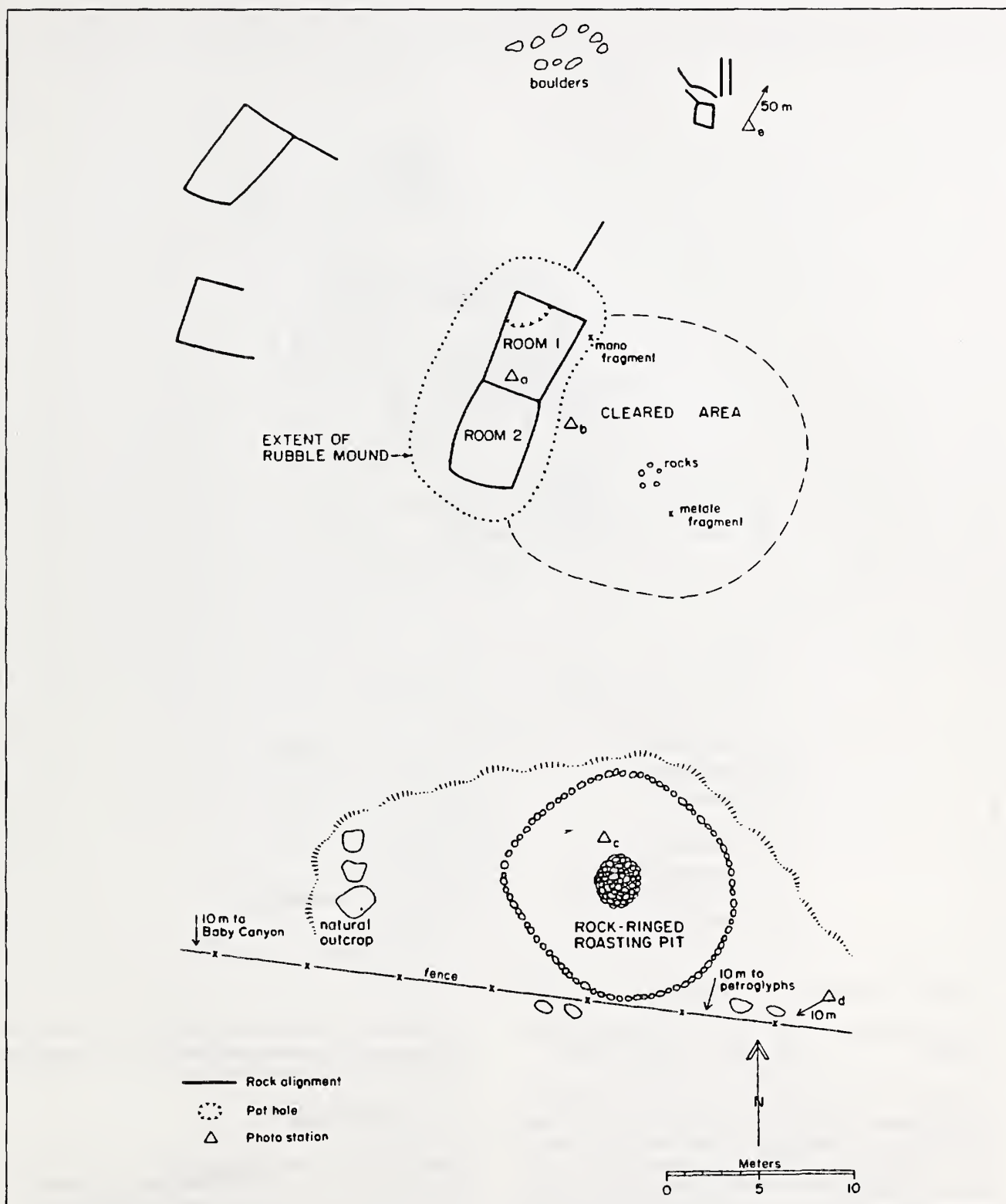


Figure 35. Map of Site ARIZ N:16:26(PC).

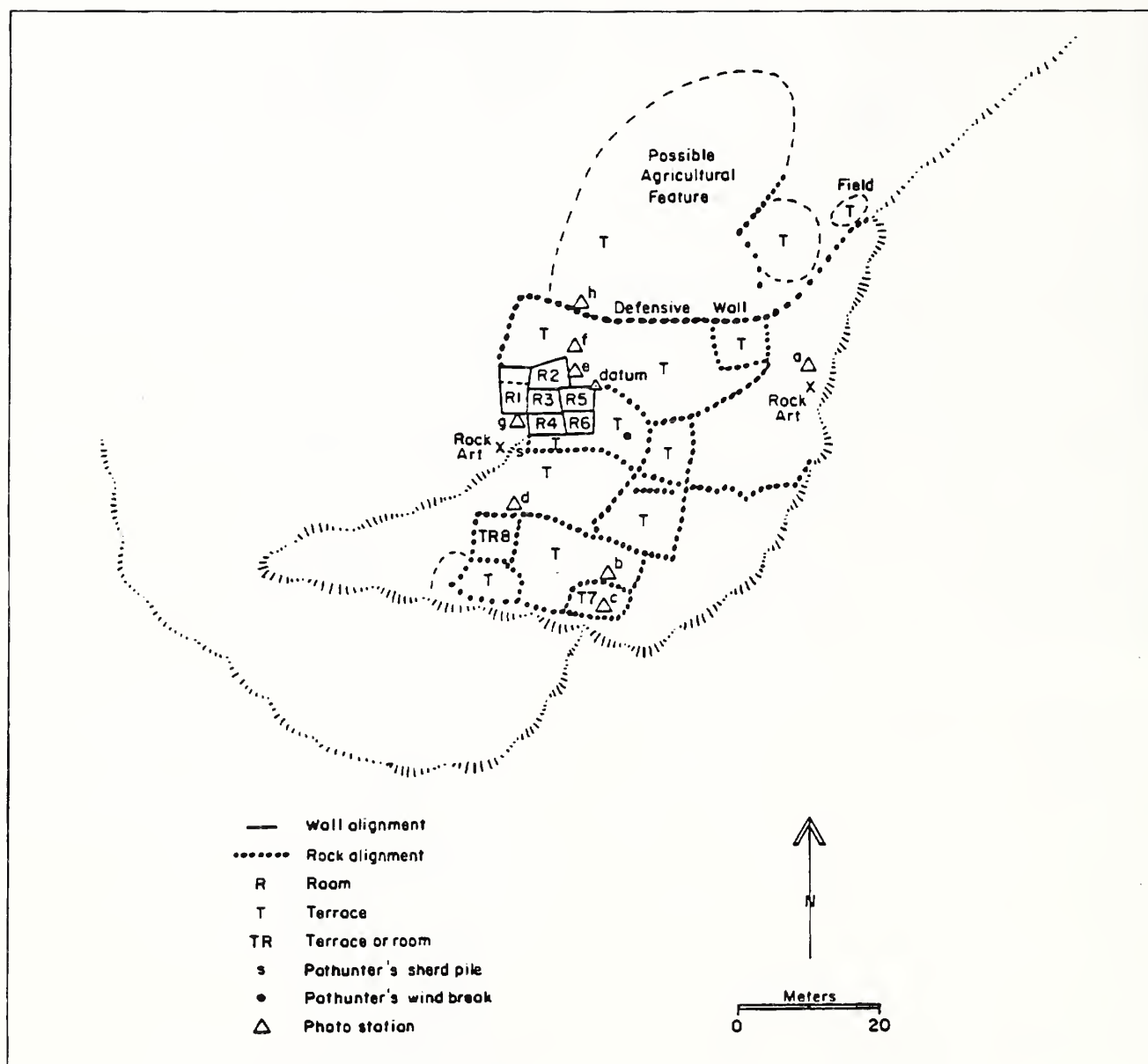


Figure 36. Map of Site ARIZ N:16:28(PC).

Land Ownership: Bureau of Land Management
Condition: Excellent (0 percent dug)

Comments: ARIZ N:16:40 consists of a block of approximately seven rooms and associated artifact scatter and is located on the south slope of a low rise 200 to 300 meters south of the Bloody Basin Road. The room block cannot be seen from the road, because it is on the back side of the rise and is only about 0.75 meter in height. Also, the mound is obscured by a fairly thick growth of catclaw acacia both on the

mound and in the surrounding area. The site appears to be entirely undamaged, and if any digging has occurred, it was a long time ago.

Site ARIZ N:16:44(PC)

Alternate No./Name: None known
Site Type(s): 1, residential (≥ 10 rooms); 8, communication (rock art)
Mound Size: 15+ rooms; 330 m²
Date of Occupation: Period 3/4 (A.D. 1150-1300/

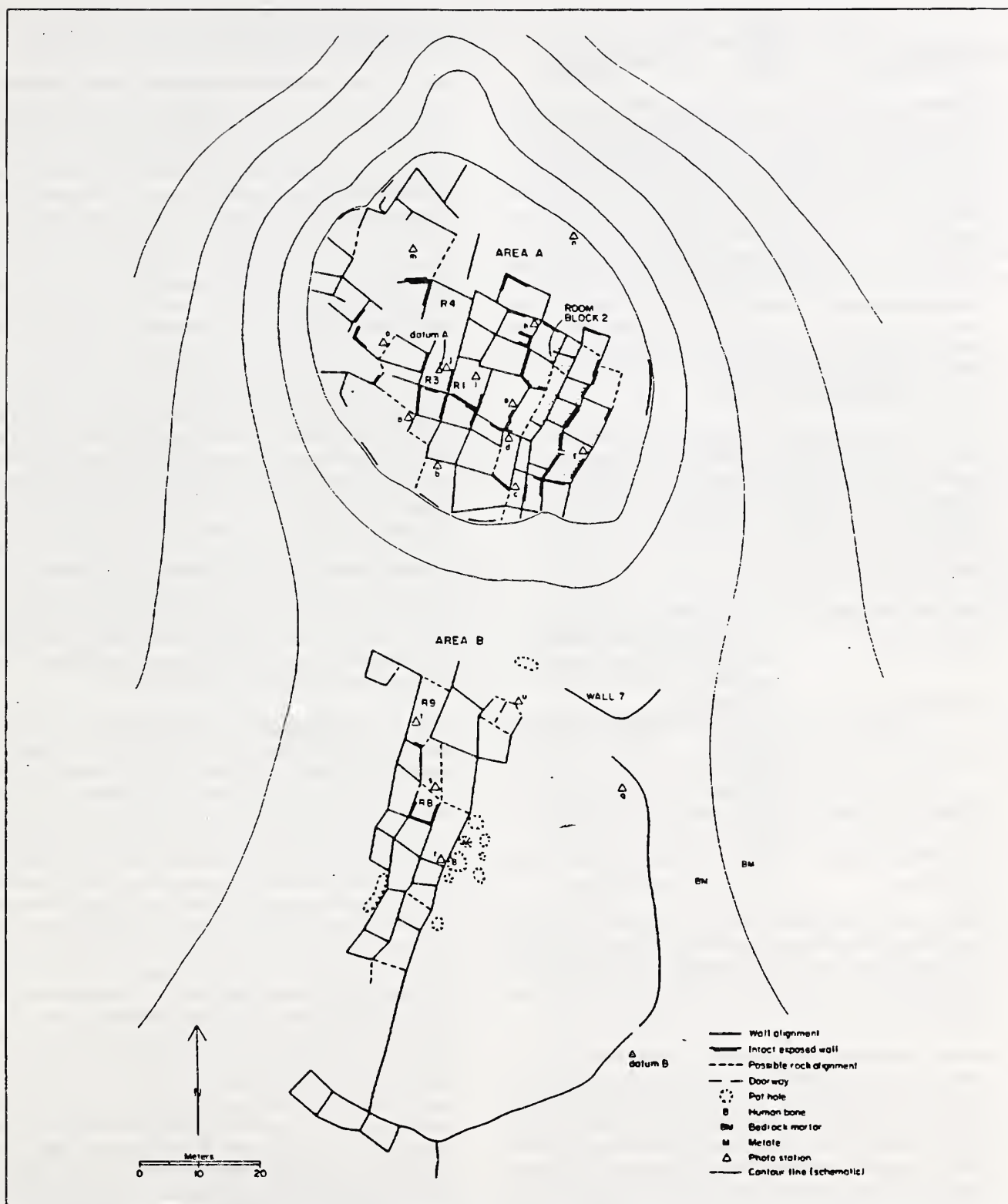


Figure 37. Map of Site ARIZ N:16:45A(PC).

Land Ownership: 1300-1400)
Bureau of Land Management
Condition: Good (<25 percent dug)

Comments: ARIZ N:16:44 is on a gentle, east-facing slope several hundred meters south of Baby Canyon. It turned out to be 0.5 km north of its mapped location and, therefore, took some time to relocate. The site is about 0.5 km from a windmill and the dirt road that passes by it, but one cannot see the site from the windmill, or vice versa. The site incorporates a compact mound, a surrounding artifact scatter and an area of boulders with petroglyphs located to the northeast of the mound. The site appears to have been only slightly damaged. One room has probably been entirely dug out. Nearby there are two recent-looking piles of stones that are up to 0.75 meter high -- perhaps they are blinds built by hunters.

Some rusty metal cans are present on the site; they look older than the digging in the room mentioned, but may not be. It is conceivable that they relate to old digging on the site, the evidence of which has been obscured by the passage of time.

Site ARIZ N:16:45A(PC)

Alternate No./Name: NA 12556
Site Type(s): 1, residential (≥ 10 rooms); 7, defensive; 8, communication (rock art)
Mound Size: 90+ rooms
Mound A = 1850 m² (minimum estimate)
Mound B = 790 m² (minimum estimate)
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Poor (>50 percent dug)

Comments: ARIZ N:16:45A is on a point jutting into Baby Canyon from the south. Area A is on a high knob at the end of the point, and Area B is on the saddle that lies between that knob and the main body of the mesa (Figure 37).

Area A consists of a large room block that covers most of the top of the knob. The mound formed by the room block is at least 2 meters in height in places, and some of the room block is two or perhaps even three stories high. Area B includes a room block running north-south along the west side of the saddle and a probable plaza covering the rest of the saddle. The steep slope between Areas A and B includes a number of rock outcrops, several of which support petroglyph panels.

In 1974, MNA (Site Card) recorded the site as "badly potted," with "modern Anglo trash."

Area A: The condition of Area A is "poor," and most if not all of the rooms on the knob have been dug, at least in part. Three periods of digging can be tentatively identified. The oldest evidence of digging is concentrated in a block of about eight rooms in the northeast corner of Area A, as well as in two or three other rooms. There is little recognizable backdirt in this room block, and the area is thickly vegetated with shrubs. This kind of damage is present over somewhat less than 20 percent of the mound. Evidence of an intermediate period of digging is to be found over most of Area A. This period of digging is represented by distinct holes and associated backdirt piles; both the holes and the piles are revegetated primarily with grass and to a lesser extent with small shrubs. In some instances there is grass growing in the bottom of a hole, and the adjacent backdirt is bare, whereas in other cases the grass is growing on the backdirt, and the hole is barren. Whether this typological distinction is also a chronological one is unclear. The most recent evidence of digging is limited to a deep (>1.0 meter) hole in the corner of a room near the center of the mound. There is fresh-looking backdirt nearby, with fragments of human bone (weathered and light, though solid) on top, and dirt clinging to the newly exposed section of wall. Both the old digging and at least some of the intermediate digging was probably in evidence when the site was recorded in 1974.

Area B: Several kinds, and periods, of pothunter damage can be recognized in Area B. Although the condition of Area B is "poor" (>50 percent dug), this portion of the site has been hit somewhat less than Area A. The southernmost half-dozen rooms in the room block were either dug some time ago, or they are undamaged. These structures have considerable rubble inside, and they are covered by a fairly thick growth of prickly pear and catclaw acacia. The south side of another structure (Room 9) has been dug out, and the hole is revegetated with prickly pear and mature snakeweed. The damage here resembles, and may be contemporary with, the evidence for the intermediate period of digging identified in Area A. In another case (Room 8), the digging is identical in style to that noted elsewhere on the mesa. The room has been trenched around the walls, and a linear pile of backdirt has been left running down the center of the room along its long axis; characteristically, this pile continues up to the wall at one end of the room. Revegetation of this structure is also roughly comparable to that of rooms assigned to the intermediate period of digging in Area A. Finally, there is fairly recent digging in the form of five holes located imme-

diately east of the room block, in the "plaza." These holes are revegetated with grass, though some of the backdirt piles are bare. Weathered but solid human bone is associated with one hole.

Site ARIZ N:16:53(PC)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room; 20 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: ARIZ N:16:53 is a one-room site located about 80 meters north of the mesa rim overlooking Squaw Creek and 300 meters south of a jeep trail (Figure 38). (Site G, which is situated on the rim, could in fact be N:16:53). The area around the small rubble mound has been badly trampled by cattle, but the site is otherwise undamaged.

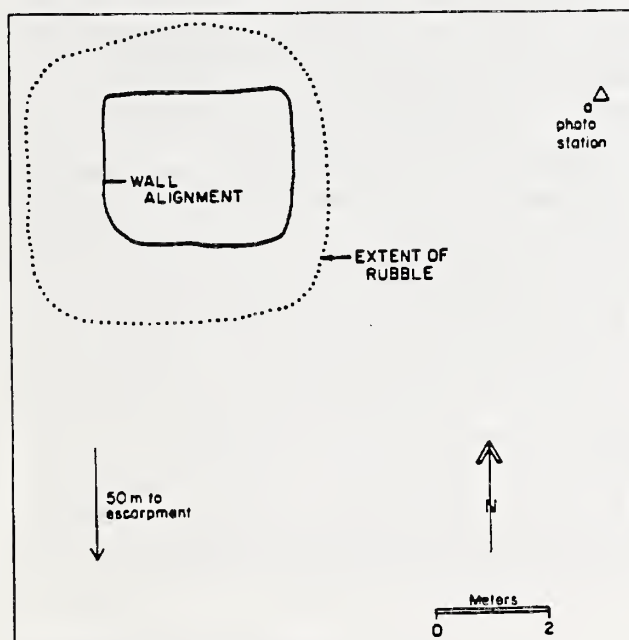


Figure 38. Map of Site ARIZ N:16:53(PC).

Site ARIZ N:16:54(PC)

Alternate No./Name: None known
 Site Type(s): 1, residential (≥10 rooms)
 Mound Size: 10+ rooms; revised to 6-8 rooms, at most

Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: ARIZ N:16:54 was added to the sample as a substitute for N:16:55, a nearby site that could not be relocated. N:16:54 is larger than N:16:55 (having an estimated 10+ rooms as opposed to 1 room). On the other hand, our recording of the site suggests that it is smaller than previously thought. Also, we obtained data from two other one-room sites in the area that were not in our sample (Sites G and H: "Additional Sites: Not in Sample").

N:16:54 consists of a scatter of small structures, some poorly defined, located on a small point overlooking Squaw Creek. The site is ca. 300 meters south of the nearest jeep trail. Our map of the site differs substantially from that produced by the CAEP in 1973. We identified one rubble pile incorporating one or perhaps more rooms, the partial rock outlines of two other structures, and an additional alignment that may relate to a fourth structure. There is no indication that N:16:54 has been vandalized. There is evidence of historic use of the site, however, perhaps relating to ranching. This evidence consists of a mason jar and lid, a milk can, the rim of another can, and a brush pile set against a dead tree.

Site ARIZ N:16:80(PC)

Alternate No./Name: AR-02-02-105(BLM)
 Site Type(s): 1, residential (≥10 rooms); 8, communication (rock art)
 Mound Size: 55-65 rooms; 1360 m²
 Date of Occupation: Period 4 (A.D. 1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Poor (>50 percent dug)

Comments: N:16:80 consists of a large, compact mound and six small outlying structures located 40 meters north of and back from the rim of Lousy Canyon (Figure 39). About a dozen rock-art motifs were noted on the cliff face below the rim. The site is approximately 1.8 km from the nearest jeep trail. Most of the mound, including portions of most or all of the rooms, has been dug; the outliers, on the other hand, look undamaged, as does most of the area surrounding the mound. Three periods of digging on the mound can be tentatively identified. In areas of the oldest digging, the room fill, which is a meter and more below the level of the surrounding wall rubble, has leveled off and is vegetated with prickly pear and small shrubs. It is conceivable, though perhaps unlikely, that some of these areas have not been vandalized. Fairly recent

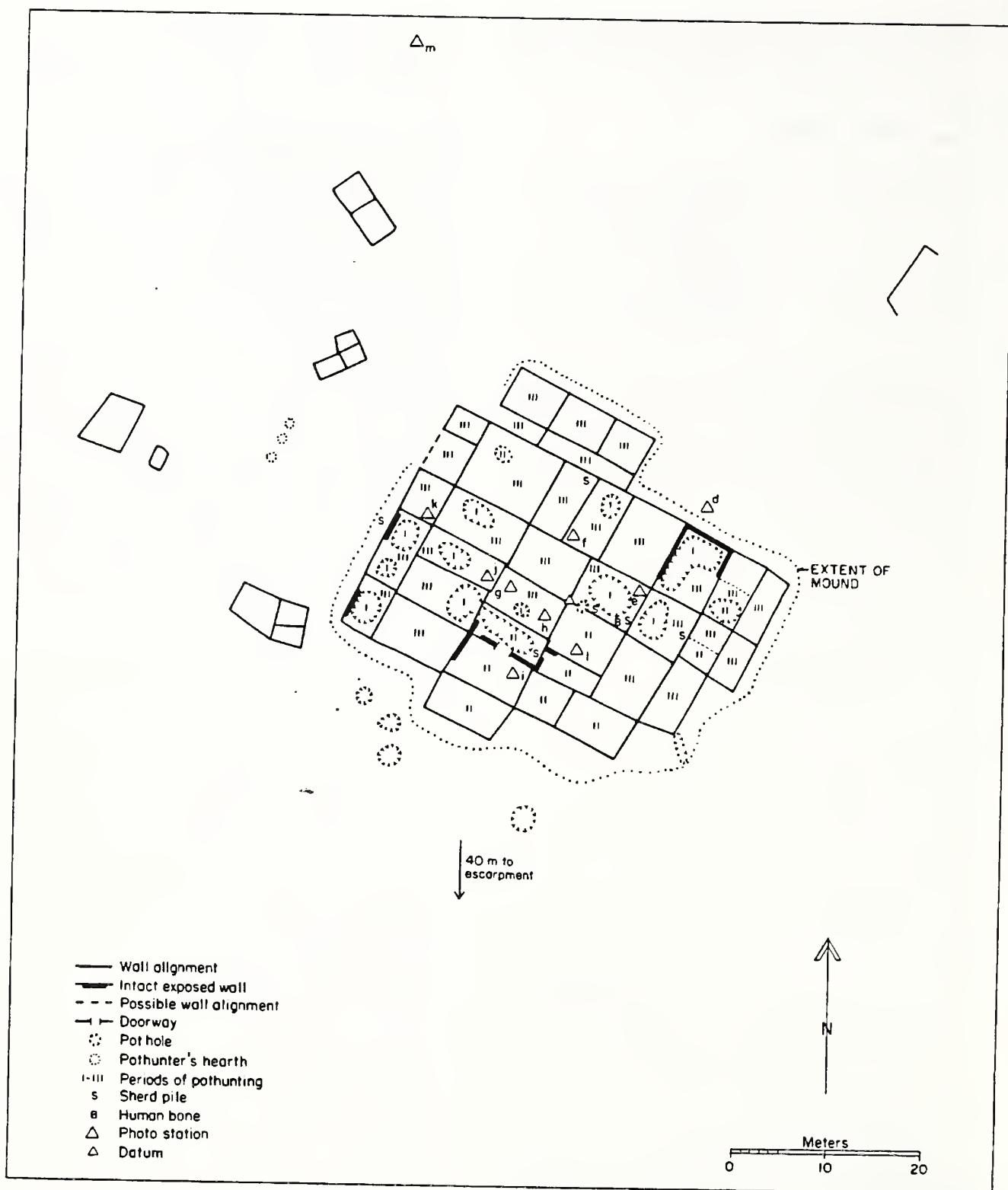


Figure 39. Map of Site ARIZ N:16:80(PC).

digging is represented by holes that have partially filled in but that retain sides at angles of up to 45 degrees; backdirt is recognizable and has, in some cases, washed down from the tops of rocks on which it was thrown. Revegetation of the holes and backdirt have been revegetated by small shrubs. The most recent digging is marked by deep (1.0 meter and more) holes with sides at greater than 45 degrees and by fresh-looking backdirt that has not washed off adjacent rubble. There are pieces of human bone on the backdirt associated with one of these holes. The digging of this period includes tunneling through walls. Considering the three periods together, the "oldest digging" accounts for somewhat more than half the mound, the "fairly recent" digging slightly less than a quarter, and the "most recent" digging slightly less than a quarter. The CAEP (Site Form) noted in 1973 that the site had been vandalized. It is clear that the most recent digging, and likely that the fairly recent digging, has occurred since 1973.

N:16:80 produced abundant evidence of pothunter activity in addition to the digging itself. Two rock art "motifs" on the cliff below the site may be recent. One appears to be a set of initials and the other is a rectilinear design that looks like the map of a small pueblo. A camping area on the west side of the mound included three or four firepits and some trash; two screens, one with a wooden frame and the other with a metal frame, were found on the mound; other trash (beverage cans, a plastic vial, a can of insect repellent, a bundle of plastic grocery bags, etc.) was scattered on and around the mound; in a crevice at the top of the nearby cliff were two plastic one-gallon "milk" bottles and a plastic grocery bag; and further down the cliff there was another plastic "milk" bottle, together with a shovel, placed in a crevice and covered with two dead agave plants. A number of the items appear to be recent, including a sales receipt from a Fry's grocery store on Camelback Ave. in Phoenix dated "10/13," a plastic bottle dated "JAN 27," a plastic yogurt container dated "NOV 23." These dates are consistent with the belief that much pothunting occurs during the fall and winter. It was our impression that these objects were probably less than a year, or at most a year and a half, old.

Site ARIZ N:16:101(PC)

Alternate No./Name: NA13315 (ARIZN:16:13[MNA])
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room; 20 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management

Condition: Excellent (0 percent dug)

Comments: It is likely that the site recorded is both ARIZ N:16:101 and NA 13315. The site is located a few tens of meters back from the edge of Perry Mesa at a point overlooking the junction of Lousy Canyon and the canyon of the Agua Fria. It is 1.4 km from the nearest jeep trail on the map and 1.8 km from the point at which we lost that trail. The site includes a small mound that is less than 0.5 meter high and that probably represents a single room. The site was in "good" condition in 1974 (MNA Site Card), and it remains undamaged today.

Site ARIZ N:16:111(PC)?

Alternate No./Name: None known
 Site Type(s):
 Mound Size: 1-4 rooms; 130 m²
 Date of Occupation: ?
 Land Ownership: Tonto National Forest
 Condition: Excellent (0 percent dug), but see "Comments"

Comments: The site we recorded may be ARIZ N:16:110. The CAEP Site Form states that ARIZ N:16:111 is 150 meters west-northwest of a stand of junipers; this description fits the recorded site exactly. On the other hand, both the presence of structural remains and the site's location on the map are a better fit with ARIZ N:16:110.

The site is on the mesa, several hundred meters north of Larry Creek. It includes a small rubble pile that may contain several rooms, along with several bedrock mortars and a one-motif pictograph. These features are surrounded by a sherd and lithic scatter that is about 60 meters in diameter. Several rusted metal cans are present, indicating that the site has been visited. A small depression on the mound could be an animal bed or a pothunter hole -- it is probably the former.

Site ARIZ N:16:120(PC)?

Alternate No./Name: None known
 Site Type(s): 1, residential (≥10 rooms)
 Mound Size: 10-12 rooms; 270 m²
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Good (<25 percent dug), possibly Fair (25-50 percent dug)

Comments: Identification of the site we recorded as

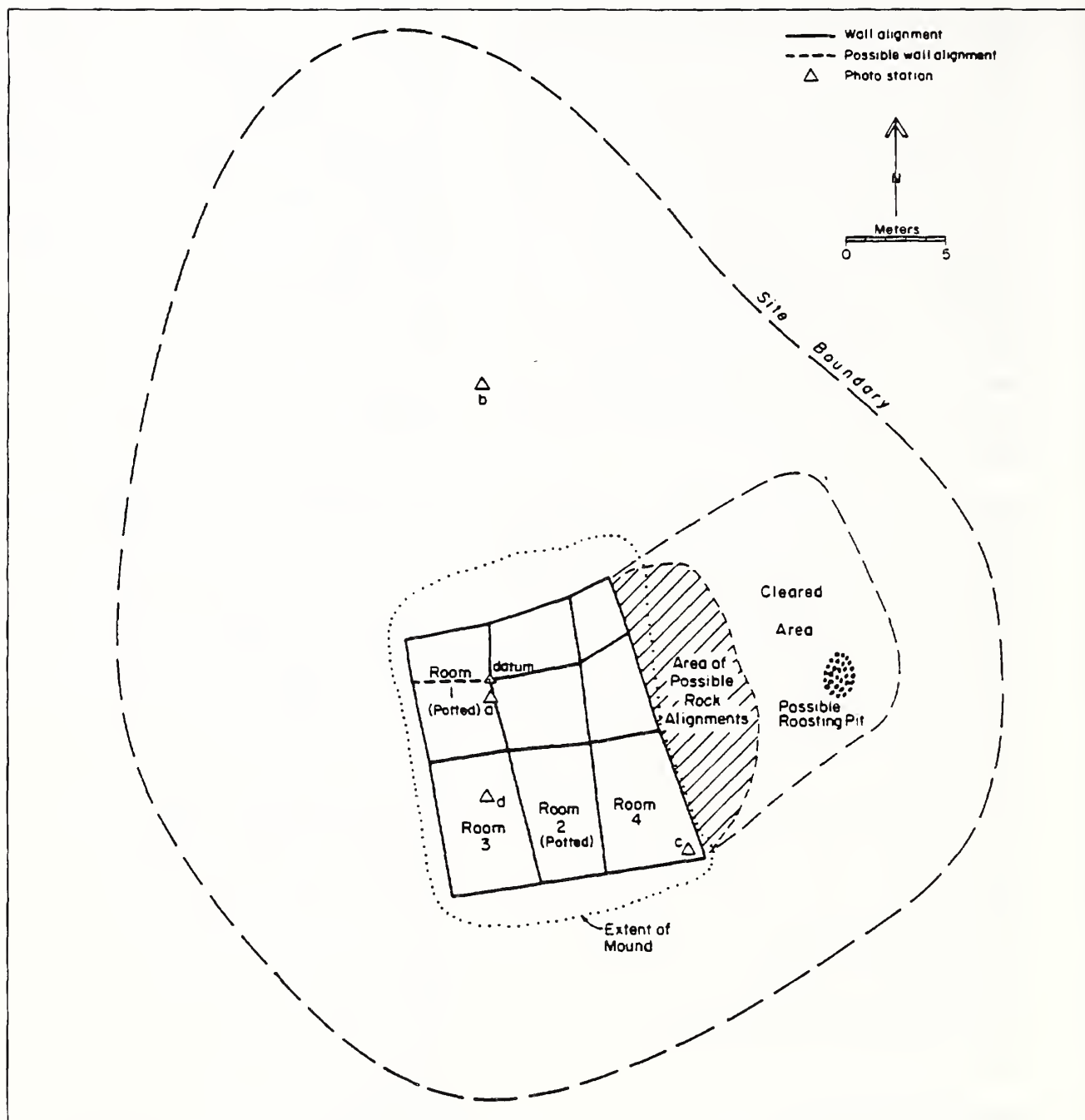


Figure 40. Map of Site ARIZ N:16:120(PC).

ARIZ N:16:120 is somewhat problematic. The recorded site is several hundred meters west of the location indicated for N:16:120. Also, the CAEP's description and map of N:16:120 do not fit our site in all particulars. On the other hand, the recorded site appears to be located inside one of the CAEP's survey areas, and if the site is not N:16:120, then the

CAEP's survey crew missed it -- which seems unlikely. Also, there are other cases in which our interpretation of a site's surface evidence differs substantially from that of the CAEP (ARIZ N:16:17, for example).

The recorded site is located 100 to 150 meters south of the south rim of Perry Tank Canyon and 400 meters

north of the nearest jeep trail. The site includes a mound that is up to 1.5 meters in height and that has a growth of vegetation which is somewhat thicker than in the surrounding area (Figure 40); the mound may be recognizable from the jeep trail and from Pueblo Pato, which is located across Perry Tank Canyon. The mound appears to incorporate 10 to 12 rooms. A cleared area on the mound's east side may be a plaza; a rock pile in this clearing may cover a roasting pit. There is a fairly recent pothunter's hole (backdirt revegetated with snakeweed) in one room. In addition, there is one room with prickly pear growing around the perimeter and another room covered with a dense growth of yucca -- these growth patterns may be indicators of disturbed soil and, therefore, of digging sometime in the past. If these areas have been disturbed, the site's condition should be considered "fair" rather than "good."

Site ARIZ N:16:121(PC)

Alternate No./Name: None known
 Site Type(s): 2, resource procurement
 Date of Occupation: ?
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: Identification of the recorded site as N:16:121 is slightly problematic. The site's mapped location corresponds to a relatively flat area where one might expect a site to be. This location has a sparse sherd and lithic scatter, but far fewer artifacts than were noted on the CAEP Site Form. Possibly this shortfall is a function of surface collection by the CAEP. Also, the site form indicates that there are powerlines 100 meters west of the site, but no lines are visible from the site that we recorded. It could be that the CAEP's form was filled out, with some errors, from memory.

Site F(PMSVS)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms); 7, defensive
 Mound Size: 4-6 scattered rooms
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Good (<25 percent dug)

Comments: Site F is at the end of a narrow point that lies between the canyon of Silver Creek and a tributary canyon (Figure 41). Pueblo La Plata is located about a kilometer to the east. A wall, presumably defensive,

extends across the point from cliff to cliff, separating Site F from the main body of the mesa. More or less intact portions of the wall are a meter thick and a meter and more in height. Four one-room (?) structures and two features that may be structures are scattered about the area within the wall. Three of the structures contain old pothunter holes. The holes are considered old because of the extent to which they have filled in (sides are at angles of 20 degrees or less), because they are accompanied by little if any recognizable backdirt, and because they support the same vegetation (grasses and small shrubs) as the surrounding site area.

SITES IN SAMPLE: NOT FOUND

Site NA 11436

Alternate No./Name: ARIZ N:16:37(MNA)
 Site Type(s): 1/11, residential/temporary residence (<10 rooms); 4, agricultural
 Mound Size: 1+ rooms
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Unknown

Comments: NA 11436 is located one to two hundred meters south of Perry Tank Canyon and is recorded as including two separate, small structures (MNA Site Card). We were unable to relocate the site on the basis of a map plot and photograph taken in 1972 when the site was recorded. In retrospect, it is possible that we did not look far enough to the west, that is, beyond the powerline on that side.

Site NA 11444

Alternate No./Name: ARIZ N:16:45(MNA)
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Unknown

Comments: NA 11444 could not be relocated. Three lines of evidence -- a map plot, MNA's site card, and a photograph of the site taken when the site was recorded -- seem to indicate three different locations for the site spread along a quarter-mile segment of the APS powerline right-of-way. The site may be somewhere that we did not look, it may be so obscure that

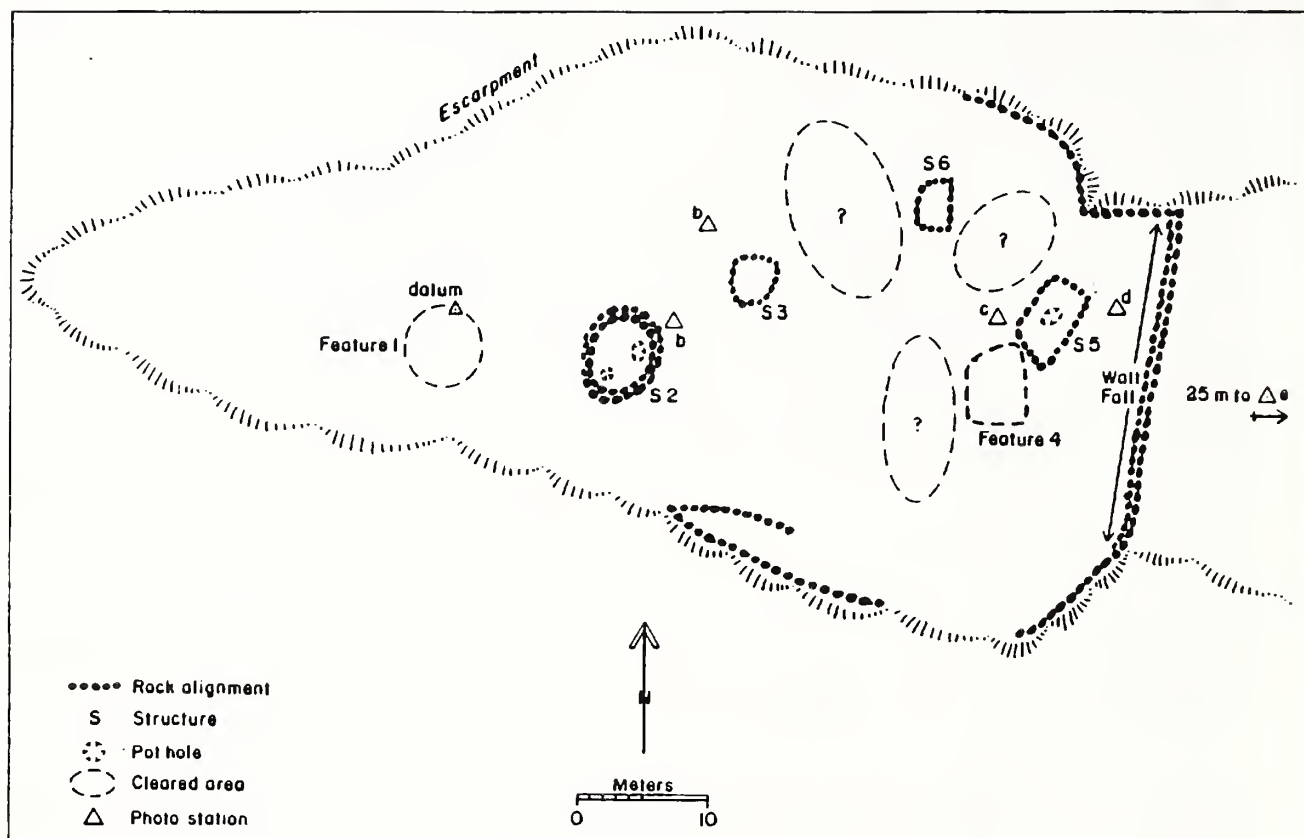


Figure 41. Map of Site F(PMSVS).

one needs to be standing on it to see it, or it may have been destroyed during construction of the powerline, in particular during restoration of the ground surface.

Site NA 13296

Alternate No./Name: ARIZ N:16:?(MNA)
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Unknown

Comments: NA 13296 is a small site located more than a kilometer from the nearest cliff. It could not be relocated, probably for one of two reasons. MNA's Site Card shows a location for the site that appears to be in the APS powerline right-of-way; the map plot for the site agrees with this placement. Much of the ground surface under the powerlines in the site's apparent location has been bulldozed. Thus, we may have failed to find the site because it has been destroyed.

Alternatively, the site could be to one side or the other of the powerlines, that is, outside the area that was searched.

Site ARIZ N:16:55(PC)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Unknown

Comments: ARIZ N:16:55 is supposed to be about 200 meters northeast of N:16:54, on the rim of the mesa overlooking Squaw Creek. A search in this area failed to relocate the site. It is possible that Site H (described below under "Additional Sites: Not in Sample"), which is located 60 to 80 meters north of N:16:54, is in fact N:16:55.

N:16:54 was substituted for N:16:55 in the sample,

because it was considered important to include a site in the analysis that was located in this part of the mesa.

Site ARIZ N:16:106(PC)

Alternate No./Name: None known
Site Type(s): 1/11, residential/temporary residence (<10 rooms)
Mound Size: 2+ rooms
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Probably destroyed (see "Comments")

Comments: ARIZ N:16:106 is supposed to be located on the south side of Perry Mesa Tank, between that feature and a jeep trail. A search in this location failed to relocate either of the two structures that are supposed to be present (CAEP Site Form), though a sparse sherd and lithic scatter was encountered. Examination of the tank suggests that it has been rebuilt in recent years. In addition, the Forest Service map of the area indicates that the jeep trail has been moved south of its original location -- probably as a result of the expansion of the tank.

This evidence, together with our failure to relocate any structures, suggests that a substantial portion of N:16:106 was destroyed when the tank was reconstructed.

Site ARIZ N:16:124(PC)

Alternate No./Name: None known
Site Type(s): 1/11, residential/temporary residence (<10 rooms)
Mound Size: 1 room
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Unknown

Comments: ARIZ N:16:124 is supposed to be 100 to 150 meters north of Perry Tank Windmill. There are several possible reasons for our inability to find the site in this location. First, the area is covered with boulders and small bedrock outcrops, and it is possible that we were unable to find a structure for this reason or that we in fact saw what was recorded as a "structure," but did not consider it a cultural feature. Second, the area has been heavily trampled by cattle, and this activity could have resulted in the fragmentation and burial of the surface artifacts that were once present. Third, surface collection by the CAEP, if it occurred, would have made the site more difficult to recognize.

ADDITIONAL SITES: NOT IN SAMPLE

Site NA 11418

Alternate No./Name: ARIZ N:16:27(MNA)
Site Type(s): 1, residential (≥ 10 rooms), possibly 1/11, residential/temporary residence (<10 rooms)
Mound Size: 11-13 rooms
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Excellent (0 percent dug)

Comments: NA 11418 is located on the south rim of Perry Tank Canyon, 0.6 km from the nearest dirt road. A brief visit to the site suggests that the count of 11 to 13 rooms is too high. NA 11418 is undamaged.

Site NA 11490

Alternate No./Name: ARIZ N:16:56(MNA)
Site Type(s): 1, residential (≥ 10 rooms)
Mound Size: 48 rooms and 3 outliers
Date of Occupation: Period 4 (A.D. 1300-1400)
Land Status: Bureau of Land Management
Condition: Poor (>50 percent dug)

Comments: NA 11490 is a compact mound, with associated trash and outliers, located a few tens of meters south of the rim of Perry Tank Canyon. A companion site, NA 11439, is located 100 to 150 meters to the southeast (see "Sites in Sample: Relocated"). The site was recorded in 1972 (MNA Site Card) as "eroded, not potted." As of the present (summer, 1990), most of the rooms have been dug, or at least dug into. Much of the digging looks recent: backdirt has not yet eroded from the tops and sides of the rubble on which it was thrown, human bone on the backdirt is weathered but firm, and revegetation is limited to snakeweed, grasses, and annuals. There also appears to be undisturbed rooms and portions of rooms. Thus, NA 11490 is a good candidate for additional pot hunting and, therefore, a good location to focus site monitoring.

Site NA 11346

Alternate No./Name: ARIZ N:16:162(MNA)
Site Type(s): 1/11, residential/temporary residence (<10 rooms)
Mound Size: 1 room
Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
Land Ownership: Bureau of Land Management
Condition: Excellent (0 percent dug)

Comments: The site recorded is probably NA 13346. It is located on a gentle south-facing slope, 0.6 km north of Lousy Canyon and 1.2 km south of the jeep trail leading to the APS powerlines. There is a rubble concentration/pile about 4 meters across that probably contains the remains of one room. The site is undamaged.

Site ARIZ N:16:12(PC)

Alternate No./Name: None known
 Site Type(s): 1, residential (≥ 10 rooms), possibly 1/11, residential/temporary residence (< 10 rooms)
 Mound Size: 10-20 rooms
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: ARIZ N:16:12 is located 50 to 75 meters back from the south rim of Lousy Canyon. It is 0.5 km from the nearest jeep trail as shown on the map, but 1.1 km from the end of that jeep trail "on the ground." Architectural remains consist of wall alignments on a low rise/mound; there may be about ten rooms. The site is undamaged, though it has been visited -- as indicated by the presence of approximately four steel beverage cans with aluminum pull-tab tops.

Site ARIZ N:16:90(PC)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence; 7, defensive?
 Mound Size: 5+ rooms
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Poor (> 50 percent dug)

Comments: ARIZ N:16:90 is on the north rim of Lousy Canyon. It occupies a point extending into the canyon, and there is a wall, possibly defensive in nature, that separates the site from the rest of the mesa. Also present are a structure with one-to-two rooms and other features that are probably agricultural. The rooms have been dug.

Site ARIZ N:16:96(PC)

Alternate No./Name: None known
 Site Type(s): 1, residential
 Mound Size: 30+ rooms
 Date of Occupation: Period 3/4 (A.D. 1150-1300/

1300-1400)

Land Ownership: Bureau of Land Management
 Condition: Poor (> 50 percent dug)

Comments: ARIZ N:16:96 is on the north rim of Lousy Canyon, 60 meters west of ARIZ N:16:80. There are several circular rock enclosures measuring about three meters across on the mound. They appear to be recent -- that is, not prehistoric -- and resemble structures built on Mound A at Squaw Creek Ruin. There is less rock rubble on the mound than at other sites, such as N:16:80. The site is badly damaged, though there are areas that appear not to have been dug, at least not recently.

Site A(PMSVS)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (< 10 rooms)
 Mound Size: 4 rooms
 Date of Occupation: Period 3/4 (A.D. 1150-1300/1300-1400)
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: Site A lies between Perry Tank Canyon to the north and Joe's Hill to the south. The site has a low mound with perhaps four rooms that is a few meters north of a jeep trail; the mound is not recognizable from this road. This is probably the reason why the site is undamaged.

Site B(PMSVS)

Alternate No./Name: None known
 Site Type(s): historic?
 Date of Occupation: 20th century?
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: Site B is located on an east facing slope, adjacent to a jeep trail that leads to the APS right-of-way. It consists of a small (1 to 2 meters across), circular structure and a rock alignment that could be a prehistoric agricultural feature. The dry-laid walls of the circular structure are several courses high, and this is the primary reason for classifying the site as historic. Because of this temporal assignment, the site is not included in any of the analyses discussed in the body of this report.

Site C(PMSVS)

Alternate No./Name: NA 13330 (see "Comments")
 Site Type(s): 2, resource procurement; 4,

communication (rock art)
 Date of Occupation: ?
 Land Ownership: Bureau of Land Management
 Condition: Fair (25-50 percent dug)

Comments: Site C is located on a terrace or bench on the north side of one of the branches of Lousy Creek, about a half a kilometer upstream from the point of entrenchment of Lousy Canyon. The site is about 250 meters south of a jeep trail. Site C might be considered part of NA 13330, which lies to the southwest, across the drainage. The site incorporates an artifact scatter (lithics and ceramics) and one or two probable middens; at least 20 bedrock mortars and several petroglyphs were noted on the low cliff that borders the site on the north. The "middens" consist of areas of dark soil that have been churned by rodents and, probably, by pothunters. The presence of rusted cans (no aluminum noted) and brown bottle glass supports the inference that vandals have contributed to the damage.

Site D(PMSVS)

Alternate No./Name: None known
 Site Type(s): 2, resource procurement
 Date of Occupation: ?
 Land Ownership: Bureau of Land Management
 Condition: Fair? (25-50 percent dug) (see "Comments")

Comments: Site D lies 50 to 100 meters back from the south rim of Perry Tank Canyon and 400 meters northwest of the nearest dirt road (at Bobs Tank). The site consists of a midden surrounded by a scatter of lithics, ceramics, ground stone, and fire-cracked rock. The midden is an area of dark sediment that may indicate the presence of one or more roasting pits. The midden has been disturbed by burrowing animals and, possibly, by pothunters -- in this case, it is difficult to distinguish between the two sources of damage.

Site E(PMSVS)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room
 Date of Occupation: ?

Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: Site E is located on the northeast side of Joe's Hill, about 200 meters east of the APS powerlines. A dirt road or jeep trail once ran along the right-of-way, but it has been destroyed. The nearest existing dirt road is 0.8 km to the north. The site consists of a small (ca. 6.5 x 4.5 meters) mound accompanied by a few plain- and red-ware sherds. It is undamaged.

Site G(PMSVS)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room
 Date of Occupation: ?
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: Site G is a one-room (?) structure located about 20 meters back from the edge of the escarpment overlooking Squaw Creek. A rock scatter located 20 meters southeast of the structure probably is a feature of some kind. The nearest jeep trail is some 350 meters to the north. Site G was located while the crew was looking for ARIZ N:16:53, and it is conceivable that it is, in fact, that site.

Site H(PMSVS)

Alternate No./Name: None known
 Site Type(s): 1/11, residential/temporary residence (<10 rooms)
 Mound Size: 1 room
 Date of Occupation: ?
 Land Ownership: Bureau of Land Management
 Condition: Excellent (0 percent dug)

Comments: Site H(PMSVS) is located 30-40 meters northwest of, and back from, the escarpment overlooking Squaw Creek. It is about 60 meters north-northeast of ARIZ N:16:54(PC). Site H may in fact be N:16:55 (described under "Sites in Sample: Not Found"). It consists of a small rubble pile that probably represents a single room. The structure has not been vandalized.

APPENDIX D

A PORTFOLIO OF REPEAT PHOTOS; SITE AR-03-12-01-44



Figure 42. Looking south from Photo Station I toward Mound A, Site AR-03-12-01-44: MNA photo 9875.1 dated 1968



Figure 43. Looking south toward Mound A, Site AR-03-12-01-44 (Photo Station I): PMSVS Photo 10.29 dated 1990.



Figure 44. Looking south at a pot-hunted room in Mound A, Site AR-03-12-01-44 from Photo Station a in 1968. Note the accumulation of fill against the wall. MNA Photo 9875.2

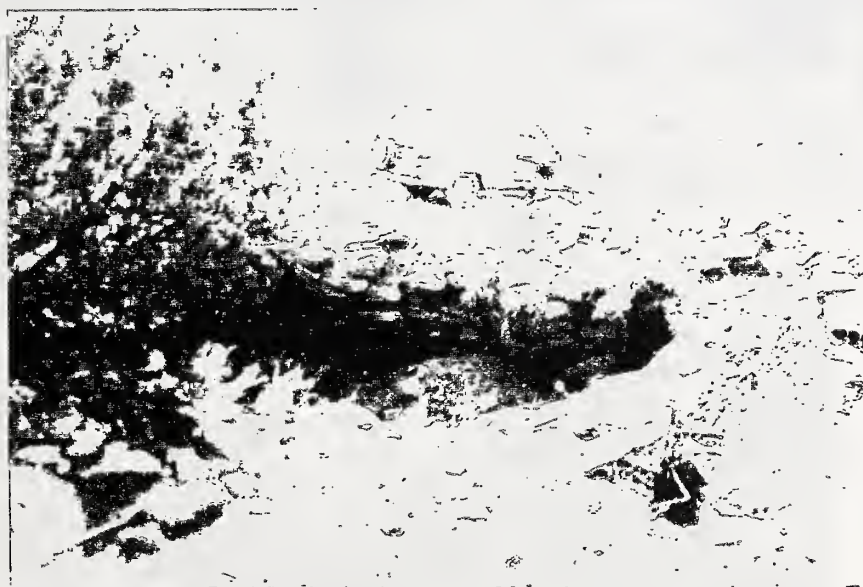


Figure 45. Looking south at the same pot-hunted room, Mound A, Site AR-03-12-01-44 from Photo Station a: MNA Photo 9875.17 dated 1978.



Figure 46. Looking south at the same pot-hunted room seen in Figures 44 and 45, Mound A, Site AR-03-12-01-44. This 1990 PMSVS Photo 10.10 was also made from Photo Station a).



Figure 47. Looking south at an exposed wall in Mound A, Site AR-03-12-01-44 from Photo Station b. Photo 67-2-28 by Peter J. Pilles, Jr.



Figure 48. Looking south at an exposed wall in Mound A, Site AR-03-12-01-44 (Photo Station b). Note erosion at the top of the wall and deposition of 20+ cm of fill at the base of the wall. PMSVS Photo 10.11 dated 1990.



Figure 49. Looking east-southeast from Photo Station c at a pot-hunted room in Mound A, Site AR-03-12-01-44. MNA Photo 9875.3 dated 1968.

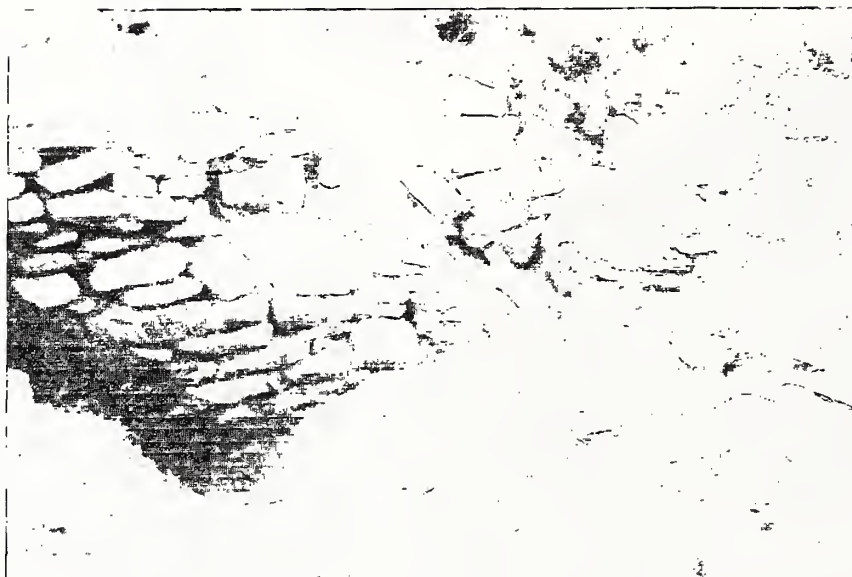


Figure 50. Looking east-southeast from Photo Station c at a pot-hunted room in Mound A, Site AR-03-12-01-44. Damage in this 1978 photo was attributed to Jones, Jones, and Gevara. MNA Photo 9875.21 was made in 1990.

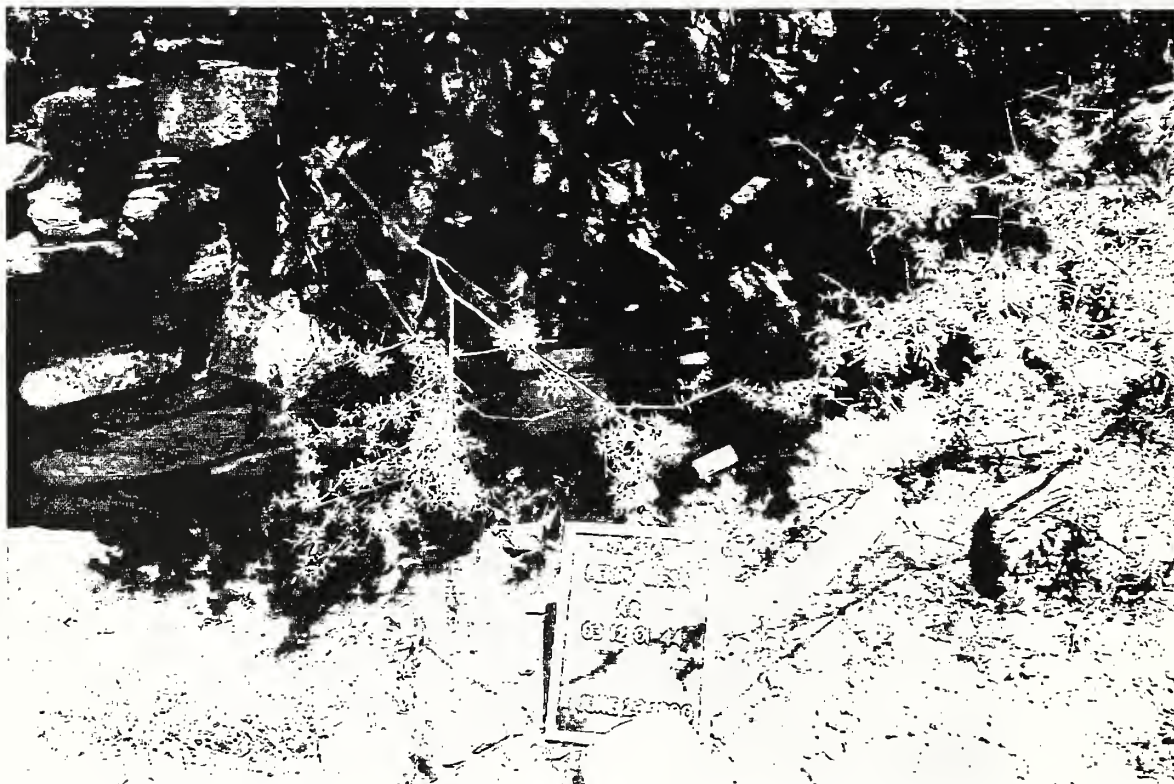


Figure 51. Looking east-southeast from Photo Station c at a pot-hunted room in Mound A, Site AR-03-12-01-44. Note the doorway and filling of hole to left. PMSVS Photo 10.13 dated 1990.



Figure 52. Looking northeast from Photo Station d across the center of Mound A, Site AR-03-12-01-44. Note the rubble pile at right. This MNA photo was made in 1968, MNA Photo 9875.4.



Figure 53. Looking northeast from Photo Station d across the center of Mound A, Site AR-03-12-01-44. Note the persistence of the rubble pile at right. This MNA photo was made in 1978, MNA Photo 9875.14.



Figure 54. Looking northeast from Photo Station d across the center of Mound A, Site AR-03-12-01-44. Compare this 1990 photograph (PMSVS Photo number 10.14) with Figures 52 and 53.

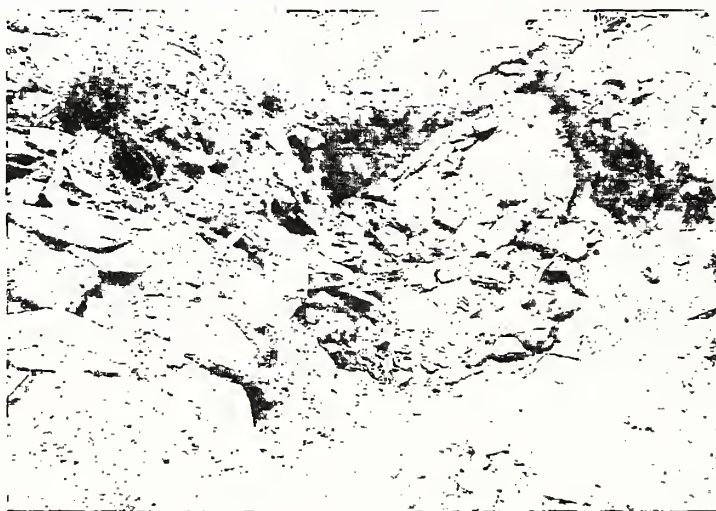


Figure 55. Looking north-northeast from Photo Station e at a pot hunted room in Mound A, Site AR-03-12-01-44. Note the washing away of loose fill and revegetation. This MNA photo (number 9875.7) was made in 1968.

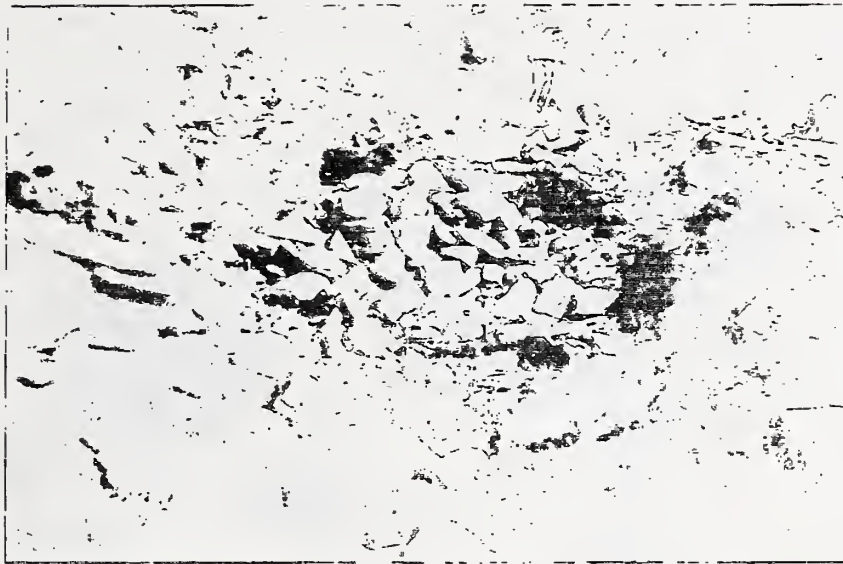


Figure 56. Looking north-northeast from Photo Station e at a pot hunted room in Mound A, Site AR-03-12-01-44. Note the digging of space behind the room in the foreground between taking of the 1968 and 1978 photos, damage attributed to Jones, Jones, and Gevara. This MNA photo (number 9875.16) was made in 1978.

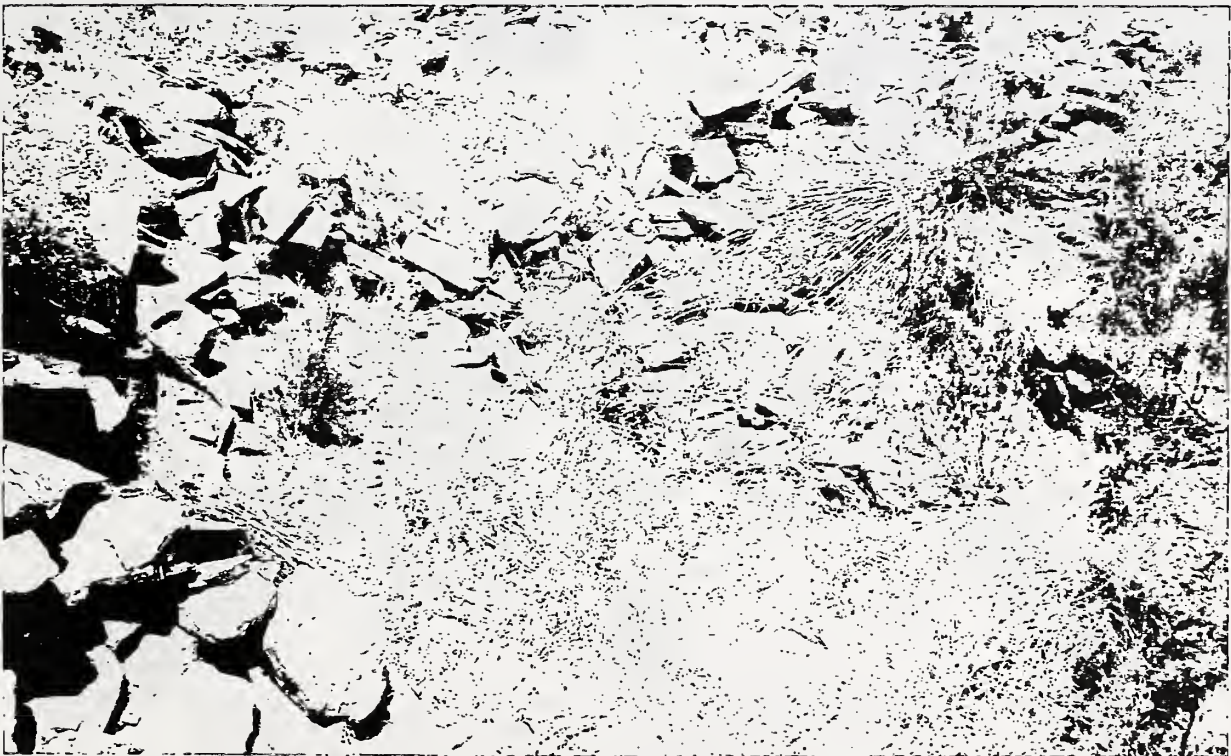


Figure 57. Looking north-northeast from Photo Station e at a pot hunted room in Mound A, Site AR-03-12-01-44. Compare to Figures 55 and 56. This PMSVS Photo (10.16) was made in 1990.

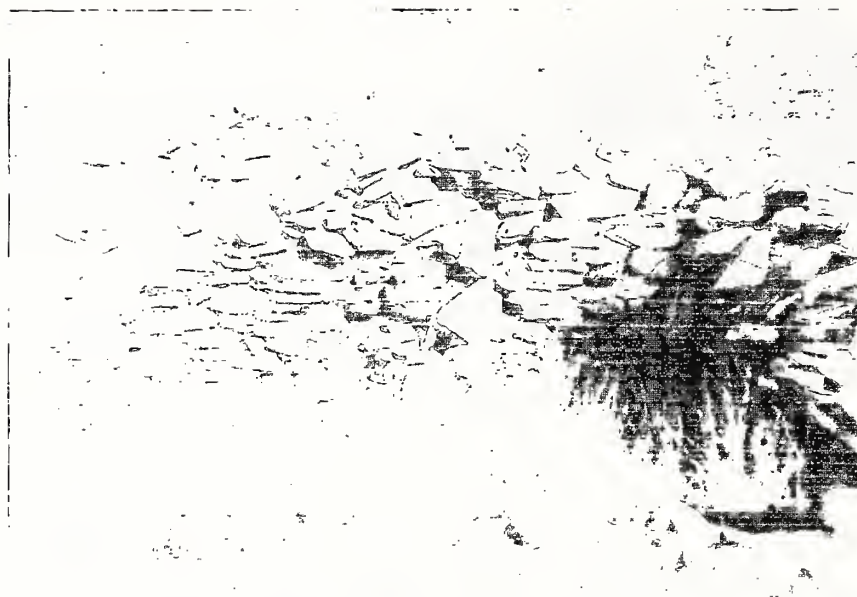


Figure 58. Looking north-northeast from Photo Station f at pot-hunted room in Mound A, Site AR-03-12-01-44. MNA Photo 9875.19 dated 1978.



Figure 59. Looking north-northeast from (Photo Station f) at pot-hunted room, Mound A, Site AR-03-12-01-44. This PMSVS Photo (number 10.18) was taken in 1990.

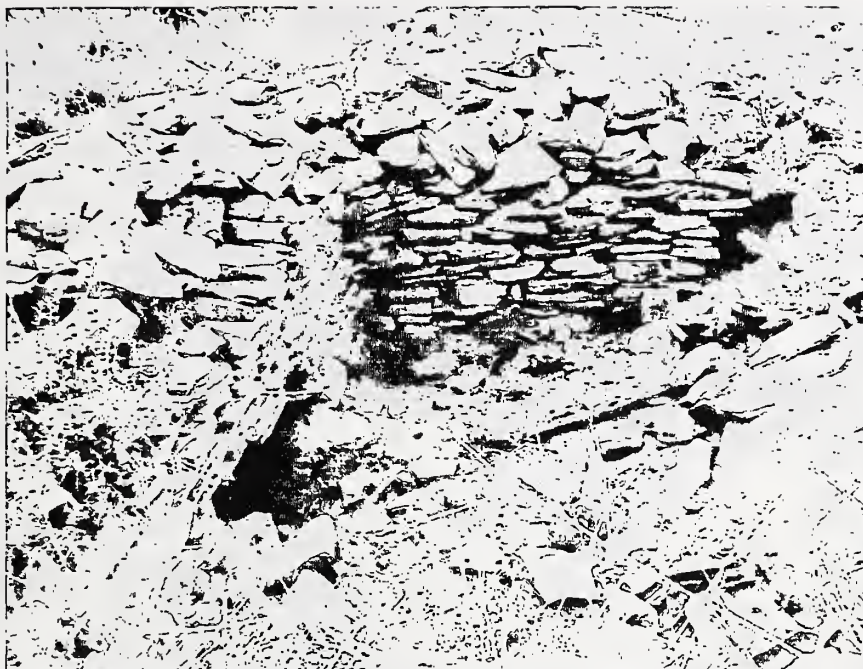


Figure 60. Looking east-northeast from Photo Station h at a pot-hunted room in Mound A, Site AR-03-12-01-44 . MNA Photo 9875.8 was taken in 1968.



Figure 61. Looking east-northeast from Photo Station h at a pot-hunted room in Mound A, Site AR-03-12-01-44 . Note the collapse of wall at left in the area of tunneling. MNA Photo 9875.18 was taken in 1978.



Figure 62. Compare this 1990 PMSVS Photo (number 10.21) of a pot-hunted room in Mound A, Site AR-03-12-01-44 with Figures 60 and 61 on page 129.



Figure 63. Looking east at pot-hunted room, Mound A, Site AR-03-12-01-44 (Photo Station j). Note wall collapse and filling of room. MNA Photo 9875.9 taken in 1978.



Figure 64. Looking east at pot-hunted room, Mound A, Site AR-03-12-01-44 from Photo Station j. Note the further wall collapse and filling of the room. PMSVS Photo 10.27 was taken in 1990



Figure 65. Looking east at pot hunted Mound A, Site AR-03-12-01-44 from Photo Station m. Digging in the area in front of and behind the door in foreground was attributed to Jones, Jones, and Gevara. This 1990 PMSVS photo is number 10.30.

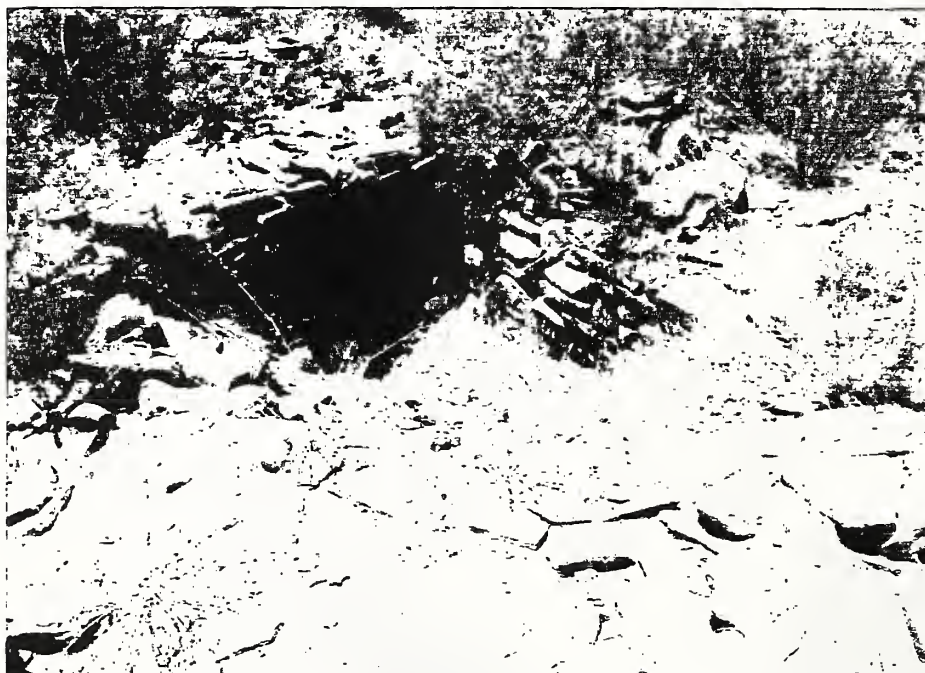


Figure 66. Looking north-northwest from Photo Station i at a pot hunted room. Digging attributed to Jones, Jones, Gevara. PMSVS Photo 10.26 was made in 1990.

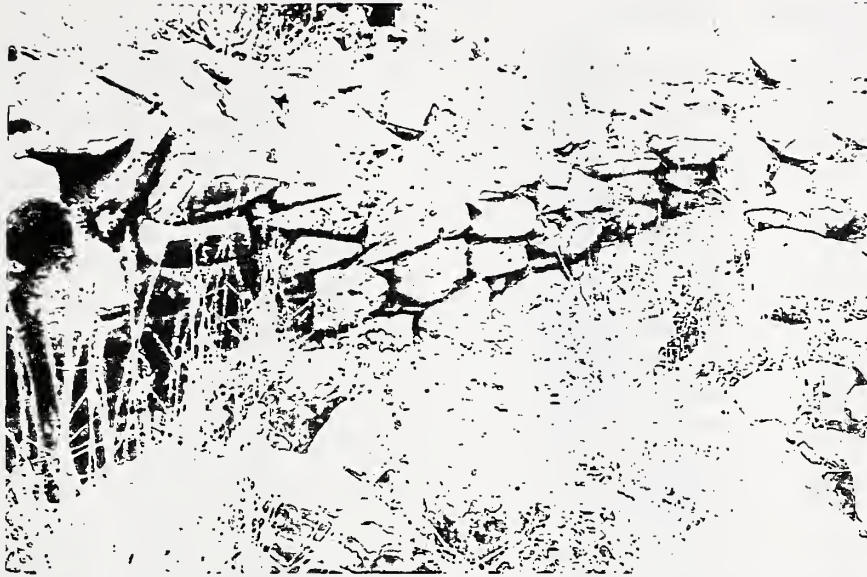


Figure 67. Looking south from Photo Station q at pot-hunted room, Mound B, Site AR-03-12-01-44 . This MNA Photo (number 9875.11) was made in 1968.



Figure 68. Looking south from Photo Station q at pot-hunted room, Mound B, Site AR-03-12-01-44 . This PMSVS Photo (10.35) was made in 1990.

Appendix E: Concordance of Control Numbers and Site Numbers

CONTROL_NU	SITE_NU	49	NA 11448
		50	NA 11449
1	AR-03-12-01-28	51	NA 11450
2	AR-03-12-01-29	52	NA 11451
3	AR-03-12-01-30	53	NA 11452
4	AR-03-12-01-31	54	NA 11453
5	AR-03-12-01-32	55	NA 11469
6	AR-03-12-01-33	56	NA 11490
7	AR-03-12-01-34	57	NA 11503
8	AR-03-12-01-35	58	NA 11590
9	AR-03-12-01-36	59	NA 11591
10	AR-03-12-01-37	60	NA 11592
11	AR-03-12-01-38	61	NA 11593
12	AR-03-12-01-39	62	NA 11602
13	AR-03-12-01-40	63	NA 11603
14	AR-03-12-01-41	64	NA 11604
15	AR-03-12-01-42	65	NA 11644
16	AR-03-12-01-43	66	NA 11645
17	AR-03-12-01-44	67	NA 11647
18	AR-03-12-01-45	68	NA 11682
19	AR-03-12-01-54	69	NA 11687
20	Squaw Creek Ruin	70	NA 11688
21	AR-03-12-01-72	71	NA 11689
22	AR-03-12-01-96	72	NA 11690
23	AR-03-12-01-165	73	NA 11785
24	NA 11414	74	NA 11786
25	NA 11415	75	NA 11787
26	NA 11416	76	NA 11788
27	NA 11417	77	NA 11789
28	NA 11418	78	NA 11790
29	NA 11419	79	NA 11791
30	NA 11420	80	NA 11792
31	NA 11429	81	NA 11793
32	NA 11430	82	NA 11795
33	NA 11431	83	NA 13295
34	NA 11432	84	NA 13296
35	Pueblo Pato	85	NA 13297
36	NA 11435	86	NA 13298
37	NA 11436	87	NA 13299
38	NA 11437	88	NA 13301
39	NA 11438	89	NA 13302
40	NA 11439	90	NA 13303
41	NA 11440	91	NA 13304
42	NA 11441	92	NA 13305
43	NA 11442	93	NA 13306
44	NA 11443	94	NA 13313
45	NA 11444	95	NA 13314
46	NA 11445	96	Site C
47	NA 11446	97	NA 13316
48	NA 11447	98	NA 13319

99	Site F	149	ARIZ N:16:46
100	NA 13326	150	ARIZ N:16:47
101	NA 13327	151	ARIZ N:16:48
102	NA 13328	152	ARIZ N:16:49
103	NA 13330	153	ARIZ N:16:50
104	NA 13331	154	ARIZ N:16:52
105	NA 13338	155	ARIZ N:16:53
106	NA 13339	156	ARIZ N:16:54
107	ARIZ N:16:120	157	ARIZ N:16:55
108	NA 13345	158	ARIZ N:16:56
109	NA 13346	159	ARIZ N:16:57
110	NA 13350	160	ARIZ N:16:58
111	NA 13351	161	ARIZ N:16:59
112	NA 13352	162	ARIZ N:16:65
113	NA 13353	163	ARIZ N:16:71
114	ARIZ N:16:6	164	ARIZ N:16:72
115	ARIZ N:16:7	165	ARIZ N:16:77
116	ARIZ N:16:8	166	ARIZ N:16:78
117	ARIZ N:16:9	167	ARIZ N:16:80
118	ARIZ N:16:10	168	ARIZ N:16:86
119	ARIZ N:16:11	169	ARIZ N:16:90
120	ARIZ N:16:12	170	ARIZ N:16:96
121	ARIZ N:16:13	171	ARIZ N:16:97
122	ARIZ N:16:16	172	ARIZ N:16:101
123	ARIZ N:16:17	173	ARIZ N:16:102
124	ARIZ N:16:19	174	ARIZ N:16:106
125	ARIZ N:16:20	175	ARIZ N:16:107
126	ARIZ N:16:21	176	ARIZ N:16:108
127	ARIZ N:16:22	177	ARIZ N:16:109
128	ARIZ N:16:23	178	ARIZ N:16:110
129	ARIZ N:16:24	179	ARIZ N:16:111
130	ARIZ N:16:26	180	ARIZ N:16:112
131	ARIZ N:16:27	181	ARIZ N:16:113
132	ARIZ N:16:28	182	ARIZ N:16:114
133	ARIZ N:16:29	183	ARIZ N:16:115
134	ARIZ N:16:30	184	ARIZ N:16:116
135	ARIZ N:16:31	185	ARIZ N:16:117
136	ARIZ N:16:32	186	ARIZ N:16:118
137	ARIZ N:16:33	187	ARIZ N:16:119
138	ARIZ N:16:34	188	ARIZ N:16:121
139	ARIZ N:16:35	189	ARIZ N:16:122
140	ARIZ N:16:37	190	ARIZ N:16:123
141	ARIZ N:16:38	191	ARIZ N:16:124
142	ARIZ N:16:39	192	ARIZ N:16:125
143	ARIZ N:16:40	193	Pueblo La Plata
144	ARIZ N:16:41	194	Site A
145	ARIZ N:16:42	195	Site D
146	ARIZ N:16:43	196	Site E
147	ARIZ N:16:44	197	Site G
148	ARIZ N:16:45	198	Site H

REFERENCES CITED

- Adams, E. Charles
1991 Pueblos, Pots, and Pot Hunters: Research at Homol'ovi, A severely Vandalized Pueblo in the American Southwest. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.
- Adams, E. Charles and Kelley A. Hays (editors)
1991 Archaeology of an Ancestral Hopi Village: Homol'ovi II. Anthropological Papers of the University of Arizona 55. University of Arizona press, Tucson (in press).
- Ahlstrom, Richard V. N.
1985 The Interpretation of Archaeological Tree-Ring Dates. Doctoral dissertation, University of Arizona, Tucson. University Microfilms, Ann Arbor.
- Ahlstrom, Richard V. N., Malcolm H. Adair and R. Thomas Euler
1991 The Research Potential of Vandalized Sites on Perry Mesa, Central Arizona. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.
- Ahlstrom, Richard V. N., R. Thomas Euler and Robert C. Euler
1990 Final Research Design, Perry Mesa Archaeological Site Vandalism Study. Submitted to Tonto National Forest, Phoenix. SWCA, Inc., Environmental Consultants, Tucson.
- Arizona Antiquities Act
1960 Arizona Revised Statutes: Title 41, Chapter 4.1
- Arizona Preservation News*
1990 Arizona Legislation Passes Two Cultural Resources Laws. Vol. 7, No. 4.
- Braun, David P.
1980 Experimental Interpretation of Ceramic Vessel Use on the Basis of Rim and Neck Formal Attributes. Appendix I In *The Navajo Project: Archaeological Investigations*, Page to Phoenix 500 KV Southern Transmission Line, by Donald C. Fiero, Robert W. Munson, Martha T. McClain, Suzanne M. Wilson and Anne H. Zeir, pp. 171-231. Museum of Northern Arizona Research Paper 11. Flagstaff.
- Brown, David E. (editor)
1982 Biotic Communities of the American Southwest — United States and Mexico. *Desert Plants* 4(1-4).
- Brown, David E. and Charles H. Lowe
1980 Biotic Communities of the Southwest. USDA Forest Service General Technical Report RM-78. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.
- Bureau of Land Management
1988 Proposed Phoenix Resource Management Plan and Final Environmental Impact Statement. Bureau of Land Management, Phoenix District, Phoenix.
- Carnett, Carol
1990 Loot System Case Summaries. Ms. on file, SWCA, Inc., Environmental Consultants, Tucson.
- Christensen, Harriet H., Ken Mabery, Martin E. McAllister and Dale P. McCormick
1988 Cultural Resource Protection: a Predictive Framework for Identifying Site Vulnerability, Protection Priorities, and Effective Protection Strategies. In *Tools to Manage the Past: Research Priorities for Cultural Resources Management in the Southwest*, edited by Joseph A. Tainter and R. H. Hamre, pages 62 to 67. USDA Forest Service General Technical Report RM-164.
- Clark, Grahame
1957 *Archaeology and Society*. Barnes and Noble, New York.
- Downum, Christian E.
1988 "One Grand History": A Critical Review of Flagstaff Archaeology, 1851 to 1988. Phd. dissertation, University of Arizona, Tucson. University Microfilms, Ann Arbor, Michigan.
- Dunning, Charles H. (with Edward H. Peplow, Jr.)
1959 *Rocks to Riches*. Southwest Publishing Co., Phoenix.
- Eastman, J. Ronald
1990 IDRISI, A Grid-Based Geographic Analysis System. Revision/Update Information 3.2.2. Clark University, Worcester, Mass.
- Fiero, Donald C., Robert W. Munson, Martha T. McClain, Suzanne M. Wilson and Anne H. Zeir
1980 *The Navajo Project: Archaeological Investigations*, Page to Phoenix 500 KV Southern Transmission Line. Museum of Northern Arizona Research Paper, No. 11. Flagstaff.
- Fish, Paul R.
1981 Federal Policy and Legislation for Archaeological Conservation. *Arizona Law Review*

22(3):681-699.

Fish, Paul R. and Suzanne K. Fish

1977 Verde Valley Archaeology: Review and Prospective. Museum of Northern Arizona Research Paper 8. Flagstaff.

Fish, Paul R., Patricia Moberly and Peter J. Pillis, Jr.

1975 Final Report for Phase IIB Archaeological Studies. Ebasco Services, Inc.; Arizona Public Service Co.; Transmission System Study; State, Private, and Federal Lands; Coconino, Maricopa, and Yavapai Counties, Arizona. Museum of Northern Arizona, Flagstaff.

Fish, Suzanne K.

1980 Agricultural Features and their Pollen Record at NA11,504. Appendix VI In *The Navajo Project: Archaeological Investigations*, Page to Phoenix 500 KV Southern Transmission Line, by Donald C. Fiero, Robert W. Munson, Martha T. McClain, Suzanne M. Wilson and Anne H. Zeir, pp. 261-270. Museum of Northern Arizona Research Paper 11. Flagstaff.

Förnby, D. E.

1986 Pinto-Gypsum Complex Projectile Points from Arizona and New Mexico. *The Kiva* 51(2):99-127.

Foster, Michael S., Douglas R. Mitchell, Cory D. Breternitz and Christine K. Robinson

1991 Opportunities, Limits, and Hazards: Making the Most of Large Site Archaeology and Urban Corridors in the Phoenix Basin. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.

Greenwald, David H. and Mark L. Chenault

1991 Differentiating the Effects of Urbanization, Alluviation, and Time on Hohokam Sites in the Phoenix Basin. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.

Gumerman, George J. and Carol S. Weed

1976 The Question of Salado in the Agua Fria and New River Drainages of Central Arizona. *The Kiva* 42(1):105-112.

Gumerman, George J., Carol S. Weed and John S. Hanson

1976 Adaptive Strategies in a Biological and Cultural Transition Zone: The Central Arizona Ecotone Project, An Interim Report. University Museum Stud-

ies No. 6. University Museum, Southern Illinois University, Carbondale.

Gumerman, George J., John A. Hanson, Douglas Brew, Karl Tomoff and Carol S. Weed

1975 The Hydrology of Prehistoric Farming Systems in a Central Arizona Ecotone. Ms., Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Hayes, Kelley A., Richard C. Lange and John H. Madsen

1984 Excavation and Surface Collection of Homolovi II Ruin. Archaeology Section, Arizona State Museum, University of Arizona, Tucson.

Hohmann, John W.

1991 Backdirt Bounty: The Research Potential of Previously Excavated Sites. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.

Honeycutt, Linda and Jerry Fetterman

1985 The Alkali Ridge Cultural Resource Survey and Vandalism Study, Southeastern Utah. Woods Canyon Archaeological Consultants, Inc. Report on file, Moab District, Bureau of Land Management, Moab, Utah.

Hough, Walter

1901 Notes and News. *American Anthropologist*, N.S., III.

Hutt (Herrgott), Sherry

1990 Protecting the Resources: The Broad Perspective. Save the Past for the Future: Actions for the '90s, 26-27. Society for American Archaeology, Washington.

Jacka, Jerry D.

1980 Prehistoric Sites of Perry Mesa. Appendix VII In *The Navajo Project: Archaeological Investigations*, Page to Phoenix 500 KV Southern Transmission Line, by Donald C. Fiero, Robert W. Munson, Martha T. McClain, Suzanne M. Wilson and Anne H. Zeir, pp. 271-282. Museum of Northern Arizona Research Paper, No. 11. Flagstaff.

Kvamme, Kenneth L.

1990 One-sample Tests in Regional Archaeological Analysis: New Possibilities Through Computer Technology. *American Antiquity*, In Press.]

1990 San Juan County, Utah, Archaeological Van-

dalism: An assessment of a Vandalism Model and Practices. Ms. in possession of the author, Arizona State Museum, University of Arizona, Tucson.

Lee, Robert F.

1970 The Antiquities Act of 1906. U.S. Department of the Interior, National Park Service, Office of History and Historic Architecture, Eastern Service Center, Washington, D.C..

Lindgren, Waldemar

1926 Ore Deposits of the Jerome and Bradshaw Mountains Quadrangles, Arizona. U.S. Geological Survey Bulletin 782. Government Printing Office, Washington.

Lipe, William D.

1974 A Conservation Model for American Archaeology. *The Kiva* 39:213-245.

Lowell, Julie C.

1988 The Social Use of Space at Turkey Creek Pueblo: An Architectural Analysis. *The Kiva* 53(2):85-100.

Macnider, Barbara S. and Richard W. Effland, Jr.

1989 Cultural Resources Overview: The Tonto National Forest. Cultural Resources Report 51, Archaeological Consulting Services, Ltd. Tonto National Forest Cultural Resources Inventory Report 88-12-312A. Appendix 2 in Tonto National Forest Cultural Resources Assessment, Management Plan, and Overview. Tonto National Forest Cultural Resources Inventory Report 89-235. [Phoenix.]

National Park Service

1982 Guidelines for Applying The National Register Criteria for Evaluation. National Register Bulletin 15. Washington.

Pilles, Peter J., Jr.

1991 Elden Pueblo: The Frustrations of Following Fewkes. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.

Pilles, Peter J., Jr. and Joseph F. Katich

1967 The Excavation of Olla Negra, A Rock Shelter Site Central Arizona, A.S.U. O:13:3. Ms. on file, Museum of Northern Arizona, Flagstaff.

Pilles, Peter J., Jr. and Albert Miller

1967 Site Report on Pueblo in Bloody Basin Area. Manuscript in the possession of Peter J. Pilles, Flagstaff.

Nickens, Paul R., Signa L. Larralde and Gordon C. Tucker, Jr.

1981 A Survey of Vandalism to Archaeological Resources in Southwestern Colorado. Bureau of Land Management Cultural Resource Series, No. 11. Denver.

Reid, J. Jefferson and Izumi Shimada

1982 Pueblo Growth at Grasshopper: Methods and Models. In *Multidisciplinary Research at Grasshopper Pueblo, Arizona*, edited by William A. Longacre, Sally J. Holbrook and Michael W. Graves, pp. 12-18. Anthropological Papers of the University of Arizona 40. University of Arizona Press, Tucson.

Rock, James T.

1978 Tin Cannister Identification: "Tin Cans." Ms. in possession of author, Klamath National Forest, Yreka, California.

Rogers, Garry F., Harold E. Malde and Raymond M. Turner

1984 Bibliography of Repeat Photography for Evaluating Landscape Change. University of Utah Press, Salt Lake City.

Scheick, Cherie L.

1991 The Agua Fria Schoolhouse Site: A Contemporary Caution. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.

Schneider, Kent A.

1990 To Whom is Looting a Crime? Save the Past for the Future: Actions for the '90s, 30. Society for American Archaeology, Washington.

Simms, Steven R.

1986 Cultural Resource Investigations in Southeastern Utah To Aid in the Assessment of Archaeological Vandalism. Report on file, Archaeological Technician Program, Weber State College, Utah.

Society for American Archaeology

1990 Save the Past for the Future: Actions for the '90s. Washington.

Soil Conservation Service

1972 General Soil Map, Yavapai County, Arizona. USDA Soil Conservation Service, (no city).

Spoerl, Patricia M. and George J. Gumerman, editors

1984 Prehistoric Cultural Development in Central Arizona: Archaeology of the Upper New River Region.

Center for Archaeological Investigations Occasional Paper No. 5. Southern Illinois University at Carbondale, Carbondale.

SWCA, Inc.

1990 Revised Technical Proposal, Perry Mesa Archaeological Site Vandalism Study. Submitted to Tonto National Forest, Phoenix. SWCA, Inc, Environmental Consultants, Tucson.

Tonto National Forest

1989 RFP: Perry Mesa Archeological Site Vandalism Study. Tonto National Forest, Phoenix.

Weed, Carol S. and Albert E. Ward

1970 The Henderson Site: Colonial Hohokam in North Central Arizona: A Preliminary Report. The Kiva 36(2):1-12.

Whittlesey, Stephanie M. and J. Jefferson Reid

1991 Repairing the Record of Kinishba Pueblo, Arizona. Paper presented at the 56th Annual Meeting of the Society for American Archaeology, New Orleans. On file, SWCA, Inc. Environmental Consultants, Tucson.

Wilson, Bruce M.

1990 Crown King and the Southern Bradshaws: A Complete History. Crown King Press, Mesa, Az.

Wood, J. Scott

1985 Winter Solstice Expedition to Perry Mesa. Ms., Tonto National Forest, Phoenix.

1987 Checklist of Pottery Types for the Tonto National Forest. The Arizona Archaeologist 21. Arizona Archaeological Society, Phoenix.

Wood, J. Scott, Michael A. Sullivan, Steve Germick and Linda B. Kelley

1989 Tonto National Forest Cultural Resources Assessment and Management Plan. Tonto National Forest Cultural Resources Assessment, Management Plan, and Overview. Tonto National Forest Cultural Resources Inventory Report 89-235. [Phoenix.]

Wylie, Jerry and Bob Nagel

1989 Quantifying and Modeling Archeological Looting: The Utah Interagency GIS Project. Paper presented at the SAA Anti-looting Working Conference, Taos.

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